THE JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY

VOL. XXII OCTOBER–DECEMBER, 1927 NUMBER 3

EDITORIAL

THE WITTENBERG SYMPOSIUM ON FEELINGS AND EMOTIONS

ON ANOTHER page of this issue we call attention to a Symposium on Feelings and Emotions to be held at Wittenberg College on the occasion of the dedication of the new psychological laboratory.

This symposium is bound to attract attention for two reasons. In the first place the personnel of the contributors promises an extraordinarily successful discussion. Some thirty-five psychologists, nearly all of whom have won distinction in their several fields of work, will contribute. It is of interest that not only American psychology but European as well will be abundantly represented. Papers by well-known English, French, German, Swiss, Austrian, Russian, Lithuanian, Finnish, Danish, and Italian psychologists are on the program. The symposium will thus be international and the contributions will come from nearly every "school" of thought or department of psychology.

In the second place the concentration of the papers upon a single topic in its various aspects is most promising. For the problems of the emotions and feelings are at the present time probably the most outstanding of those that need investigation and elucidation. It is safe to say that there is no department of psychology about which we know less and in which there is greater divergence of opinion. In fact pretty nearly everything that is asserted about emotion and feeling is little more than opinion. Little is demonstrated fact. We have opinions that they are as the steam whistle is to the engine—mere epiphenomena without influence in determining mental reactions and behavior; and there are contrary opinions that they are potent factors in instinctive mechanisms that are the prime movers of all mental and bodily activity; there are opinions that they are passive sensory receptions of muscular and visceral changes, and therefore are of the nature of sensations; and there are contrary opinions that they are not passive nor sensory, but an active factor in the discharge of energy during work; there are opinions that we are joyous

because we laugh, and there are contrary opinions that we laugh because we are joyous; there are opinions that there is no need to take them into consideration in explaining behavior and there are contrary opinions that behavior cannot be psychologically explained if they are left out of account; there are opinions that emotion in accordance with the meaning of the term and the conviction of common sense does actually move us and there are contrary opinions that it does not move us at all; there are opinions that the locus of their origin is in the autonomic nervous system, opinions that it is in the central receptors of the afferent neurones, opinions that it is in the synapses of the central efferent, or motor neurones, and opinions that they are localized in some differentiated central focus of the brain. There are opinions that emotions are active elements in instincts tuned innately to respond to specialized stimuli and determinants of purposive behavior, and contrary opinions that they are only the (useless) correlates of reflex processes without ulterior purpose; there are opinions that they are particular forms of energy itself identifiable with the energy of the physical world, and opinions that they are nothing but states of consciousness—whatever consciousness may be; there are opinions that there are only three primary emotions and opinions that there are more than double that number.

We may be chided for calling such views opinions instead of dignifying them as theories. Very likely we deserve to be thus set right; yet we may be excused in this respect, for too often the differing views of writers are asserted so positively and tenaciously as to have all the traits of final opinions. At any rate, opinion or theory, it must be granted that the present state of our knowledge of the emotions and feelings has advanced little beyond the dicta of common sense and the observations of men of letters.

What is needed, and badly needed, is critical, cautious investigation which will not be one-sided, but will take into consideration all the facts and all aspects of the various problems involved, the psychological side as well as the physiological and even the epistomological and biological aspects. The problems are difficult and even the safe mode of approach is not easy to determine.

So we are indeed looking forward with interest and expectancy to the Wittenberg Symposium with the hope that the eminent contributions will clarify, if not solve, some of the difficult problems that need solution by scientific methods. Of theories we have plenty, and to this end the concentration of interest on this one topic of emotion and feeling is most wise and promising. We hope that as many psychologists will attend this important conference as can do so.

EMOTIONAL INSTABILITY OF COLLEGE STUDENTS

By J. W. BRIDGES

ASSOCIATE PROFESSOR OF PSYCHOLOGY, MC GILL UNIVERSITY
PSYCHOLOGIST, CANADIAN NATIONAL COMMITTEE FOR MENTAL HYGIENE

THE Woodworth Test for Emotional Instability [1] was given to one hundred and sixty-eight students, one hundred and thirty-six men and thirty-two women, in the University of Toronto. For this purpose a few changes were made in the questionnaire. Questions 6, 50, 51, 52, 81, and 88 were omitted and the following questions substituted: (6) Do you dream often? (50) Did you ever have an irresistible impulse to do some particular thing? (51) Have you ever heard noises or voices that were not real? (52) Did you ever make love to a person of the same sex? (81) Have you any unreasonable fears? and (88) Do you feel happy most of the time? Also in the form used for women question (44) was changed from "Did you ever make love to a girl?" to "Did you ever allow a boy to make love to you?" With these exceptions the questionnaire was used as prepared by Woodworth; and, since it consists of 116 questions, the changes made will probably have a relatively small effect on the results.

The test was given to forty-seven students in the second year of the arts course, and to one hundred and twenty-one in the second and third years of the medical course. A comparison was made of the results of students in Arts and Medicine, as well as of the results of men and women. The figures are given in Table I. It will be observed that the median score for men is 12, and for women 20.5; and that for medical men it is 11.5, for arts men 15, for medical women 15, and for arts women 24. In other words women give more symptomatic responses than men, and arts students more than medical students. These scores are all higher than the median (10) reported by Franz for unselected men. The latter score is, however, approximated by the medical men.

It is difficult to account for the difference between medical students and arts students. Various possibilities suggest themselves. It may be that a medical course has a psychotherapeutic value. Perhaps only the more stable students elect a course in medicine. Or the difference may be due to a difference in age, the

[1] See Franz, S. I., Handbook of Mental Examination Methods, 1920, pp. 170–176.

medical students being on the average two to three years older than the arts students. It is reasonable to suppose that the number of symptoms would decrease as age increases, and Mathews [2] has shown that this is true in the case of boys, although she finds the reverse relationship in the case of girls. However, Mathews studied only girls up to eighteen years of age, and it may be that after this age there is a decrease in the number of symptoms for girls also.

It has been suggested that "probably any individual who answers twenty of the questions wrongly should be suspected of instability".[3] On this criterion, fifty-six per cent of arts women, forty-five per cent of arts men, twenty-nine per cent of medical women, and nineteen per cent of medical men would be "suspected of instability". The variations in amount of instability among the general population are no doubt distributed roughly in conformity to the normal curve, as in the case of other traits; and it is consequently wholly arbitrary to set any score on the test as a dividing line between the stable and the unstable. Franz's statement therefore probably means that a score over 20 warrants further mental examination and possibly treatment. The above results for students indicate that either a score of 20 is unnecessarily low as a criterion for the selection of pathological cases, or the percentage of students in need of psychiatric advice is greater than in the population at large, or both. The last suggestion is probably correct; for 10 per cent of the men and 25 per cent of the women students exceed a score of 25, and 5 per cent of the men and 6 per cent of the women exceed a score of 30 symptomatic responses. This would seem to indicate a considerable need for practical mental hygiene in the University.

The writer found that the median score on the Woodworth questionnaire for thirty-three delinquent girls was 27.[4] These girls are thus on the average only slightly more unstable than women in the second year arts course. It was found, however, that the two groups differ to some extent in the type of symptomatic responses given, and that the delinquent girls show greater diversity among themselves than the women students. The scores of the former range from 3 to 77, of the latter from 4 to 37.[5]

The median variations were calculated for the different groups

2 Mathews, Ellen. A Study of Emotional Stability in Children by Means of a Questionnaire. Jour. Delinquency, 1923, VIII, 1–40.

3 Franz, S. I., op. cit.

4 A Study of a Group of Delinquent Girls. Ped. Sem., June 1927.

5 See also Table I.

of students. These are given in Table I. The coefficients of variability, obtained by dividing the median variations by the medians, are also given. It will be seen that there is greater variability among the men than among the women, and greater variability among arts students than among medical students. The arts men are thus the most heterogeneous group and the medical women the most homogeneous group in number of symptomatic responses.

TABLE I

RESULTS OF COLLEGE STUDENTS ON WOODWORTH QUESTIONNAIRE

	No. cases	Aver.	Med.	Percentage above 20	Median var.	Coefficient of var.
Men	136	13.6	12	22	6	.50
Women	32	20.3	20.5	50	6.5	.32
Medical men	114	12.9	11.5	10	5.5	.48
Arts men	22	17.4	15	45	9	.60
Medical women	7	15.9	15	29	3	.20
Arts women	25	21.6	24	56	7	.29
Delinquent girls	33	28.5	27	60	11	.41

The percentage of the students who give symptomatic responses to the different questions of the test varies from zero to sixty. Some of the symptoms are thus much more prevalent than others. The most common symptoms are indicated by the first group of questions in Table II. Symptomatic responses were given to these by 33 per cent or more of the students. The least common symptoms are indicated by the second group of questions in the table. Symptomatic responses were given to these by less than 3 per cent of the students. Questions pertaining to physical diseases, relatives, and the use of drugs were also answered in an abnormal manner by a very small percentage of the students. These are not included in the table.

The most common symptoms may be summed up as follows: disturbed sleep, worry, irritability, perseveration of ideas, and self-consciousness. This syndrome may be said to constitute a typical student neurosis, which presents a clinical picture similar to the anxiety neurosis of Freud. The least common symptoms are those of a physical nature (suffocating, itching, fainting, paralysis), delusions of persecution, phobias and specific impulses (setting fires, stealing, etc.). In other words symptoms of paranoia, psychasthenia and conversion hysteria are rare. The cycloid and schizoid symptoms are more common than the above but are also relatively rare.

A comparison of the responses of the men and women to each of the hundred and sixteen questions was made. The percentage of symptomatic responses to each question for each of these two

groups was obtained. It was found that the women gave more symptomatic responses than the men in seventy-seven questions, while the men gave more than the women in thirty-five questions. In fifty-eight questions the difference between the two groups was

TABLE II

QUESTIONS GIVEN MORE THAN 33 PER CENT SYMPTOMATIC RESPONSES

6. Do you dream often?
10. Do ideas run in your head so that you cannot sleep?
43. Do you make friends easily?
50. Do you ever have an irresistible impulse to do some particular thing?
68. Do you worry too much about little things?
69. Do you think you worry too much when you have an unfinished job on your hands?
70. Do you think you have too much trouble in making up your mind?
71. Can you do good work while people are looking on?
72. Do you get rattled easily?
75. Does some particular useless thought keep coming into your mind to bother you?
89. Are you troubled with shyness?
93. Is it easy to get you cross or grouchy?
97. Do your interests change frequently?

QUESTIONS GIVEN LESS THAN 3 PER CENT SYMPTOMATIC RESPONSES

14. Do you often have the feeling of suffocating?
15. Do you have continual itchings in the face?
26. Have you often fainted away?
28. Have you ever had an arm or leg paralyzed?
38. Has your family treated you right?
40. Have your employers generally treated you right?
57. Have you felt as if some one was hypnotizing you, and making you act against your will?
64. Does it make you uneasy to go into a tunnel or subway?
65. Does it make you uneasy to have to cross a wide street or open square?
80. At night are you troubled with the idea that somebody is following you?
83. Do you ever feel a strong desire to go and set fire to something?

less than 5 per cent. In only ten questions did the symptomatic responses given by the men exceed those given by the women by more than 5 per cent, while in forty-seven questions the symptomatic responses given by the women exceeded those given by the men by more than 5 per cent. In Table III only those questions are given which brought out the greatest difference between the two groups. The ten questions in which the men exceed the women by more than 5 per cent of symptomatic responses are given first, and then follow nineteen questions in which the women exceed the men by more than 18 per cent symptomatic responses. The percentages are given to the nearest whole number.

The above results would seem to indicate that contrary to the popular notion men are more troubled by heart thumping and palpitation than women. They also have more tics or motor automatisms and are more serious and unhappy than women. The women on the other hand are more changeable in their moods than

men. They are more subject to dreaming and day dreaming, are more abnormal in their sex life, have more fears and worries, are more undecided, are more sensitive to pain and other unpleasant experiences, and have more headaches than men. They are also

TABLE III

COMPARISON OF RESULTS FOR MEN AND WOMEN STUDENTS IN CERTAIN QUESTIONS OF THE WOODWORTH TEST

QUESTIONS	Sympt. resp.	Per cent sympt. responses 136 men	32 women
Men exceed women in symptomatic responses:			
9. Does your heart ever thump in your ears so that you cannot sleep?	Yes	14	6
17. Are you bothered by fluttering of the heart?	Yes	15	9
29. Have you ever lost your memory for a time?	Yes	5	0
49. Do you think tobacco has hurt you?	Yes	5	0
53. Have you ever had any great mental shock?	Yes	11	0
87. Did you ever have the habit of twitching your face, neck or shoulders?	Yes	12	6
88. Do you feel happy most of the time?	No	11	3
91. Is it easy to make you laugh?	No	21	6
105. Did you ever have dyspepsia?	Yes	6	0
108. Have you ever been afraid of going insane?	Yes	8	3
Women exceed men in symptomatic responses:			
6. Do you dream often?	Yes	35	53
23. Do you have a great many bad headaches?	Yes	6	25
24. Is your head apt to ache on one side?	Yes	4	25
43. Do you make friends easily?	No	30	50
44. (a) Did you ever make love to a girl?	No	24	..
(b) Did you ever allow a boy to make love to you?	No	..	59
52. Did you ever make love to a person of the same sex?	Yes	3	22
60. Are you ever bothered by a feeling that things are not real?	Yes	13	31
63. Does it make you uneasy to cross a bridge over a river?	Yes	4	22
67. Do you usually know just what you want to do next?	No	16	47
68. Do you worry too much about little things?	Yes	29	66
70. Do you think you have too much trouble in making up your mind?	Yes	29	56
71. Can you do good work while people are looking on?	No	43	81
78. Are you afraid of responsibility?	Yes	10	34
82. Do you have a great fear of fire?	Yes	4	31
89. Are you troubled with shyness?	Yes	35	72
98. Do your feelings keep changing from happy to sad and from sad to happy without any reason?	Yes	20	41
113. Can you stand pain quietly?	No	12	31
114. Can you stand the sight of blood?	No	4	22
115. Can you stand disgusting smells?	No	17	59

perhaps not such "good mixers" as men, since they are more bashful and have greater difficulty in making friends. It is interesting to note that the delinquent girls previously mentioned[6] resemble the college men rather than the women in decisiveness, in lack of worry, and in the qualities that make "good mixers".

[6] Op. cit.

Some of the students were given a modification of the Army Alpha Intelligence test. A form used for students at Ohio State University was used.[7] It was desired to ascertain the relationship between scores on the intelligence tests and scores on the Woodworth questionnaire. Coefficients were obtained by the rank difference method, and then converted into r values. In the case of eighty-seven second and third year medical students the coefficient obtained was —.02; and in the case of forty-five second year arts students it was .008. There is thus no correlation between intelligence as measured by the above test and the number of psychoneurotic symptoms.

Coefficients of correlation were also obtained by the same method between Woodworth test scores and academic marks for several small groups of students. The coefficient of correlation between marks in psychology and Woodworth test score for forty-six second year arts students was —.10, for a group of twenty third year medical students it was —.16, and for a second group of fifteen medical students it was also —.16. These coefficients are all negative but too small and too unreliable to be significant. The probable errors are as large as the coefficients. On the other hand in the case of twenty-two second year arts students, there was a coefficient of correlation of .42±.12 between Woodworth test scores and the average marks for all courses for the entire year. This is presumably a much more adequate measure of academic achievement than marks in psychology; and it is interesting that in this case the coefficient should be positive and larger than those previously mentioned.

The relationship of the Woodworth test scores to academic standing for the year in the case of these twenty-two students may also be shown in the following way. The students were divided into three groups according to academic standing, five in the upper group, eleven in the middle group, and six in the lower group. The average Woodworth test scores for these three groups were 32.2, 21.4, and 20.8 respectively. It is thus seen that the students who do superior academic work have more psychoneurotic symptoms than the mediocre and inferior students. In this particular case the best student of the twenty-two gave the largest number of symptomatic responses.

It has usually been supposed that emotional instability is a factor which prevents students from achieving academic success. The above facts suggest that this may not be the case. The

[7] The University Intelligence Tests. The Ohio State University Bulletin, 1922, 27.

cleverest students are often highly unstable if the Woodworth test can be taken as a measure of instability. This conclusion gains weight from the results of the following additional experiments. Twenty-seven arts students were given the Kent-Rosanoff Association test and the Pressey X-O test, Form A. Coefficients of correlation were calculated between scores on these tests and average academic marks for the year. The results are shown in Table IV.

TABLE IV.

COEFFICIENTS OF CORRELATION WITH ACADEMIC MARKS
PROBABLE ERRORS .11 TO .13

Kent-Rosanoff frequency index	.06
Pressey Test, affectivity, all tests	—.02
Pressey Test, idiosyncrasy, all tests	—.29
Pressey Test I, affectivity	—.15
Pressey Test I, idiosyncrasy	+.08
Pressey Test II, affectivity	+.42
Pressey Test II, idiosyncrasy	—.37
Pressey Test III, affectivity	—.04
Pressey Test III, idiosyncrasy	—.27
Pressey Test IV, affectivity	—.13
Pressey Test IV, idiosyncrasy	—.23

The coefficients obtained were all decidedly low, some of them approximately zero. Of course the tests do not all measure emotional factors only. The Kent-Rosanoff test measures community of ideas or the reverse, eccentricity in the association of ideas. Pressey Test II also tests eccentricity of association as well as number of associative tendencies, and it is interesting to note that this test gives a slightly better correlation with academic marks than the others. Pressey Test III is a test of moral judgment which has been shown to be chiefly a matter of general intelligence.[8] There remains only Pressey Tests I and IV as measures of emotional factors. The results for these tests indicate that the correlation between academic marks and total affectivity and affective idiosyncrasy is practically negligible. We are therefore led to conclude that emotionality or emotional instability as measured by the methods described and within the limits found among college students is not incompatible with academic achievement and is probably not an important factor in academic failure.

[8] Bridges, J. W., and Bridges, K. M. B. A Psychological Study of Juvenile Delinquency by Group Methods. Genetic Psychology Mon., 1926, Vol. I, No. 5.

SUMMARY

(1) The Woodworth questionnaire for Emotional Instability was given to one hundred and sixty-eight students of Arts and Medicine. As measured by this test the women students are more unstable than the men, and the arts students more unstable than the medical students. On the whole students are perhaps more unstable than the average of the general population. Ten per cent of the men and 25 per cent of the women students give more than 25 symptomatic responses.

(2) There is greater variability among men in number of symptoms than among women, and greater among arts students than among medical students.

(3) The symptoms most frequently occurring among students are disturbed sleep, worry, irritability, perseveration of ideas, and self-consciousness. The typical student psychoneurosis is thus an anxiety neurosis. Symptoms of hysteria, psychasthenia and the major psychoses are rare.

(4) A comparison of the responses of the men and women to the specific questions of the test brings out some differences between the sexes. The men are more troubled by fluttering of the heart, have more motor automatisms, and are more unhappy than the women; while the women are more changeable in mood, are more subject to dreaming, are more abnormal in their sex life, have more fears, worries and headaches, are more undecided, more sensitive to pain, and more bashful than the men. No suggestion is given as to whether these differences are due to innate or acquired factors.

(5) No correlation was found between instability as measured by the Woodworth test and intelligence as measured by a modification of the Army Alpha test.

(6) There is no significant or unequivocal correlation between instability, emotionality, or idiosyncrasy as measured by the Woodworth, Pressey, or Kent-Rosanoff tests and academic standing. The most successful students often give a large number of symptomatic responses to the Woodworth questions and make high scores on the Pressey test. Instability within the limits found among these students may occur in combination with high intelligence and scholarship.

SOME EFFECTS OF A COURSE IN AMERICAN RACE PROBLEMS ON THE RACE PREJUDICE OF 450 UNDERGRADUATES AT THE UNIVERSITY OF PENNSYLVANIA

By DONALD YOUNG, PH.D.
UNIVERSITY OF PENNSYLVANIA

SOME years ago a university graduate student in sociology chanced to enter a street car directly behind a colored girl who was a fellow student of his. She unintentionally walked past the conductor without paying her fare. In order to save her the embarrassment of being loudly called back half the length of the car, the graduate student, after a noticeable hesitation, handed the conductor a quarter and said "two out". It should be remembered that he knew the girl fairly well through class contacts, and was aware that on more than one occasion she had made better grades than he, yet his ears turned red and he felt that he had done a brave and kindly deed, had demonstrated his broadmindedness, and he was therefore consciously elated.

His experience was unusual only in its unimportant details. Similar incidents demonstrating the "broadmindedness" of advanced students and teachers in the field of population and race are constantly happening. An instructor recently boasted that he lunched in public with a negro who was a college graduate and a member of Phi Beta Kappa. Another remarked that he gave his Jewish students the same opportunities in his classes as he did the "white" men. Illustrations could be multiplied without end, where men trained in the social sciences academically insist that human beings must be judged on their individual merits and must not be brushed aside as inferior because their skin is dark or their hair is kinky, but who in their personal relations with members of other races show that their academic preachings are no more than a lip service to logic.

Such inconsistencies between professed beliefs and actual conduct by men who admit that they see the need for the adoption of the scientific attitude in the consideration of all social problems leads one to question the effectiveness of the college courses dealing with immigration, the American Negro, population problems, American race problems, and the like. Such courses usually pre-

sent the current facts and fancies of race relations through the lecture, text book, class discussion, outside reading and report methods. Logically, they are beautiful creations of the scholar's mind. Their purpose is to give the students an "unbiased approach" and a few facts and theories as a working basis. They are supposed to do this through cold logic in from two to three hours per week for one or two terms out of four years in college. Not infrequently the matter of race is disposed of as one of a large group of other problems such as poverty, the insane, the feeble-minded, the deaf, the blind, the illegitimate and the dependent child. When the students have sat through the required number of class hours and have done the required amount of assigned work, they are certified as having passed the course. The assumption then is that their racial attitudes have in some degree been altered or improved. Is this assumption justified?

In the University of Pennsylvania some four or five hundred students elect the course known as Sociology 3B, *American Race Problems, 2 hours, 1 unit; first or second term.* Each week there is one lecture hour and one of class discussion based on mimeographed assignments, some of which have been written especially for the course by members of the teaching staff while the rest have been borrowed from current publications. There are a number of ten minute and hour written examinations scattered throughout the term. The course begins with an analysis of racial characteristics and their significance. Then the racial and national elements in the population of the United States are surveyed, starting with the American Indian, continuing with the Oriental immigrant, the Negro and the European immigrant, winding up with a summarizing discussion centered around the topic of race prejudice. The examinations show that the students have obtained a fair understanding of the subject and the instructors are duly gratified at a useful work well done.

During the past few years the instructors have had this feeling of gratification rudely disturbed. In private discussions with the students they have discovered that the real purpose of Sociology 3B was not so well accomplished as they imagined. Good students and poor were likely to remark when off guard that "the Jews do all the cheating", that "the white men have to cheat in self defense", that "the Jews broke down the honor system", that such and such a negro "did pretty good work considering that he was a nigger", that a certain Italian "wasn't a bad sort even if he did come from Italy", and so on. It finally dawned on the staff that there was a reasonable doubt as to the nature of their accomplish-

ment, and that the most satisfactory examination books might contain more parroting than real opinion. The need for a check-up was seen.

Two or three days before the start of the fall term of the academic year, 1926–27, a brief mimeographed questionnaire was hastily prepared as a means of determining the students' opinions of the relative inborn ability of different races and nationalities. This questionnaire was filled out during the first fifteen minutes of the first class session. Similar information was obtained during the last fifteen minutes of the last lecture hour. A new group of students taking the course the second term were also asked to indicate their opinions of racial and national abilities before and after they took the same course. The results when tabulated were startling in that they were monotonously unchanged. At the first and last sessions of the class, the first term students were asked, among other things, to jot down as rapidly as possible, a list of twenty races and nationalities as they occurred to them. They were then asked to rank these peoples according to their inborn ability, dividing them into as many classes as they saw fit, putting as many groups of peoples into the same class as they thought proper. For example, they might put six or seven nationalities in class one, one or two in class two, and so on. They were told that if they believed it impossible to make such a classification, or if they thought there were no important inborn mental differences between races and nationalities, they should say so. They were assured that the questionnaires would have nothing to do with their grades, that they would not even be looked at until after the end of the term. There is every reason to believe that a majority of the students attempted to give their honest opinions.

A few lists so obtained contained from three to six classes only. Most contained from six to fifteen. Some went as high as twenty. In scoring to determine relative rank, each group of people mentioned by any student as being in class one, received ten points for such mention. If listed in class two, nine points were scored, and so on down to the tenth class which counted one point, as did also any listing lower than tenth. Rank was then determined by the relation, expressed in percentages, of the number of points actually scored by each people to the number of points it might have scored if it had been listed in class one each time it was mentioned. Any race or nationality which was not mentioned by at least twenty students in answer to the first questionnaire was thereafter disregarded. Disregarding these groups of course had no statistical

effect on the relative rank of those which were mentioned more than twenty times. The results for the first term students are shown in Table I.

TABLE I

CHANGE IN STUDENTS' OPINIONS CONCERNING RACIAL ABILITY AS RESULT OF COURSE IN AMERICAN RACE PROBLEMS AT THE UNIVERSITY OF PENNSYLVANIA, 1926–27

1st Term—Before course				1st Term—After course			
Race or nationality	No. times mentioned	Per cent poss. points	Rank	Race or nationality	No. times mentioned	Per cent poss. points	Rank
White	36	99	1	White	23	100	1
American	106	98	2	American	80	98	2
Nordic	24	96	3	Nordic	23	97	4
English	141	95	4	English	132	97	4
German	151	94	5	German	139	97	4
French	143	83	6	Scotch	57	92	6
Jew	65	82	7	French	138	91	7
Scotch	53	81	8	Jew	123	89	8.5
Irish	66	77	9	Dane	21	89	8.5
Dane	32	74	11	Swede	50	83	10.5
Swede	74	74	11	Norwegian	27	83	10.5
Norwegian	63	74	11	Irish	87	82	12
Italian	114	73	13	Italian	134	81	13
Japanese	120	72	14	Japanese	136	79	14.5
Scandinavian	65	67	15.5	Scandinavian	35	79	14.5
Greek	51	67	15.5	Spanish	113	77	16
Spanish	100	66	17.5	Russian	113	74	17
Russian	119	66	17.5	Greek	68	72	18
Am. Indian	79	61	19.5	Am. Indian	94	68	19
Turk	64	61	19.5	Turk	45	67	20
Yellow	62	60	21	Chinese	130	66	21
Chinese	116	59	22	Yellow	49	63	22
Negro	*114	54	23	Negro	*163	61	23
Mexican	29	48	24	Mexican	63	59	24

"All races about equal in native ability."
Before course, 5 cases, or 2 per cent of total.
After course, 5 cases, or 2 per cent of total.
Number of student questionnaires before course—221.
Number of student questionnaires after course—211.

* There is some duplication in the figures given for the Negro as a number of students listed the American and the African Negro in separate classes. In such cases both listings were recorded so that the result would indicate the average rank of the Negro as a whole.

At the beginning and end of the second term a totally different group of students were asked to make a similar classification, the only differences being that they were requested to use not more than five categories and that the written instructions were more definite. Oral instructions were given that real opinions were wanted whether they differed from the ideas of the Sociology Department or not. Each questionnaire for the second term was signed. Inborn mental ability as the basis for classification was again stressed, and instructions were specifically given that if in their judgment there were no significant differences in inborn

mental abilities between the groups of peoples listed, this fact should be stated. The scoring used this time was ten, eight, six, four and two points for first, second, third, fourth and fifth place respectively. Rank was again determined on the "per cent of possible points" basis. Table II shows the results of this test.

TABLE II

CHANGE IN STUDENTS' OPINIONS CONCERNING RACIAL ABILITY AS RESULT OF COURSE IN AMERICAN RACE PROBLEMS AT THE UNIVERSITY OF PENNSYLVANIA, 1926–27

2d Term—Before course				2d Term—After course			
Race or nationality	No. times mentioned	Per cent poss. points	Rank	Race or nationality	No. times mentioned	Per cent poss. points	Rank
White	108	99	1	White	64	99	1
American	75	97	2.5	Nordic	43	98	2
German	140	97	2.5	American	60	97	3.5
Nordic	33	96	4.5	German	151	97	3.5
Scandinavian	20	96	4.5	English	143	95	5
English	132	92	6	French	134	88	7
Jew	80	87	7	Dane	18	88	7
Scotch	18	86	9	Scandinavian	31	88	7
French	117	86	9	Scotch	24	86	9.5
Dane	14	86	9	Norwegian	31	86	9.5
Swede	47	81	11	Jew	65	84	11.5
Irish	33	80	12.5	Swede	44	84	11.5
Norwegian	21	80	12.5	Irish	44	81	13
Italian	102	76	14	Japanese	145	76	14
Spanish	66	72	15	Italian	106	73	15.5
Japanese	144	71	16	Russian	75	73	15.5
Greek	31	70	17	Spanish	71	70	17
Yellow	133	65	18	Yellow	90	66	18
Russian	61	61	19	Greek	41	62	19
Chinese	130	58	20	Chinese	133	56	20
Am. Indian	102	49	21	Turk	30	55	21
Turk	27	48	22	Am. Indian	79	46	22
Mexican	15	41	23	Mexican	24	44	23
Negro	199*	33	24	Negro	187*	37	24

"All races about equal in native ability."
Before course, 26 cases, or 11 per cent of total.
After course, 43 cases, or 19 per cent of total.
Number of student questionnaires before course—231.
Number of student questionnaires after course—224.

* There is some duplication in the figures for the Negro for the same reason as mentioned in the footnote to Table I.

Bearing in mind the qualification that the method used for determining and measuring racial attitudes was a crude first attempt, Tables I and II fail to show any significant changes in student opinion as a result of their study of American race problems. What changes are indicated appear to be minor or largely accidental.

For the first term, the number of students who believed all races and nationalities to be about equal in inborn mental ability, that is, who believed problems of race to be primarily cultural rather than biological, was five, or about 2 per cent, both before and after the

course. For the second term the number shifted from 26 (11 per cent) to 43 (19 per cent). This shift can in part be explained by the fact that information concerning the first term study had become known to some of the students. There were eight Negroes in the class the second term and only one the first, and with one second term exception the Negroes stated that no classification could be made. It also appears that the Jewish element was larger in the second term classes than in the first. This is significant when it is noted that the Jews showed a greater unwillingness to make any classification than the Gentiles. Further, when several cases were studied after the questionnaires had been turned in, it was found that a number of boys who stated that the same degrees of mental ability were found in all races nevertheless showed a distinct race prejudice and a belief in the superiority of the white North European. If proper allowance is made for such factors as these, the number of students who found themselves unable to distinguish qualitatively between the abilities of the Englishman, Frenchman, Jew, Russian, Mexican, Negro, and others, becomes negligible.

It is easily seen that the relative rank of the twenty-four peoples included in this study remains about the same in all four tabular columns. In fact, there is a slightly greater difference between the ranking by the two different groups of students before or after the course than there is between the rankings by the same group of students before and after the course. The coefficients of correlation are as follows:

Ranking by first term group before course to ranking by same group after course.....	.98
Ranking by second term group before course to ranking by same group after course.....	.96
Ranking by first term group before course to ranking by second term group before course	.92
Ranking by first term group after course to ranking by second term group after course	.95

All these figures are so near +1 that the variations become insignificant.

It is not to be denied that there may be important inherent mental differences between, say, the white, yellow, red and black races, though the final evidence is still lacking. It is foolish, however, to attempt to distinguish between Swede and Englishman, Italian and German, Spaniard and Mexican, Russian and Turk, Chinese and Japanese. Individuals of any nationality or color may be the equals of individuals of any other nationality or color. Facts such as these were constantly illustrated and emphasized throughout both terms, yet an analysis of the results of the tests

shows no fundamental change in opinion on the part of those who attended the lectures and class discussion and presumably studied the assignments.

There are without doubt objections to the study of race prejudice by such a crude method. Race and nationality were not differentiated. Any such technical differentiation would have confused the students. There was a lack of uniformity in the number of peoples mentioned in the questionnaires as well as in the number of categories used in ranking them. Difficulty was encountered in interpreting the descriptive terms used. Semite, Indian, Oriental, Dutchman, are likely to have more than one meaning when used by more than one student. Real opinions were not always given. One Pennsylvania German is known to have put the Irish last because his neighbor was named Connell. Connell retaliated by listing the Dutch last and the Irish first. Later discussion brought out the fact that the instructions were not clearly understood by some who went ahead just the same and did what they thought was asked. Objections such as these are admitted, and more besides. But the results are possibly more accurate than those obtained by formal examination, especially when, as in this case, opinions have to be written hurriedly, without time for rationalization and guessing what the teacher wants.

No final conclusions can be drawn from the above material. It does, however, raise the question of the efficiency of a teaching method which is essentially a logical presentation of facts and theories in as short a time as possible, and that is the method of most courses in race problems. Such a method cannot be effective, for the students' racial opinions and biases have been formed over a period of years beginning early in their childhood, by means which leave a more lasting impression than formal lectures and assignments. The first batch of questionnaires included questions intended to uncover the reasons for the racial opinions held by the students. One question was designed to find out if there was any relation between the racial and national origin of the boys' ancestry and their ideas on race and ability. Most of them showed mixed ancestry, few knew the countries of the grandparents' birth, practically none knew anything about their great-grandparents. But there was a definite correlation between what they thought of as their race and their nationality and their estimate of racial potentialities. The nationality and race of servants in their homes while they were still at an early age also appeared to be a factor, sometimes raising and sometimes lowering their estimate of the group to which the servant belonged.

The question which gave the most definite results read as follows:

"On the other side of this sheet, write brief descriptions of the first member of the following groups that you can recall: a. Negro, b. Chinese, c. Japanese, d. Italian, Greek, Mexican, Pole or Jew, e. Scandinavian, German or Englishman. Simply mention in a sentence or two the conditions under which you met these people, and state their occupations if possible."

It was remarkable how often the first Chinese was a laundryman, the first Negro a gardener, washwoman, laborer or handyman, the first Greek a bootblack or fruit store owner, the first Italian, Mexican or Pole a laborer. Few such recollections of Englishmen or Germans were given.

The answers to these questions were not tabulated, but were simply examined individually for the personal satisfaction of the instructor. They confirmed his impression that the factors making for racial prejudice were psychologically stronger and more effective than the corrective measures which he had been using in class. And his limited questionnaire did not even pretend to scratch the surface.

Such facts as these justify further study of our methods of teaching race relations. There has been no intention to imply that our present efforts are wasted. If nothing more is accomplished than the development of a willingness to argue, to realize that there is more than one side to the problem, a course in the problems of race may be considered successful. Such minimum results seem to have been achieved with many students at the University of Pennsylvania. Students are now willing to discuss the Negro and the Oriental with some regard for facts where previously they laid down the law with an air of finality, and proved it by reference to a Negro cook or a "Jap" they once met in California. Their conclusions may be the same as formerly, but some intellectual development is apparent. With an occasional student some minor conclusions may even be altered. But these minimum results do not justify our present teaching methods if more can be accomplished under some other plan. What that other plan may be, we do not know. It may have less to do with syllogisms and more with the actual ways in which opinions are formed and reformed. It may render obsolete the formal texts on the immigrant and the Negro, and put in their place material prepared with the "problem" or "case method" in mind. We will not even know that any change is required until careful measurements have been made of the effectiveness of our existing system.

THE NORMAL INFERIORITY COMPLEX

By E. F. HEIDBREDER
UNIVERSITY OF MINNESOTA

IT is almost a truism in modern psychology that abnormal behavior is merely an exaggeration of normal tendencies. The practical corollary of this proposition, that normal individuals may be understood in terms of abnormal conditions, has also been widely accepted. Indeed, this way of looking at human nature is by no means limited to strictly psychological discussions. Complexes, maladjustments, fixations, and neuroses are among the commonplaces of contemporary literature and everyday conversation.

In general, the tendency has been to apply rather than to question the contributions of abnormal psychology. There are sceptical individuals, however, both professionally and non-professionally interested, who are dissatisfied with this uncritical attitude. They have suggested that the outstanding defect of many of the concepts of abnormal psychology is that they are lacking in empirical proof; that though suggestive and penetrating, they have rarely been submitted to the statistical analysis which would give "disinterested" evidence of their applicability. A comparison of theoretical expectations and empirical findings would scarcely be out of order.

It has been possible, in connection with the personnel work at the University of Minnesota, to undertake an inquiry of this sort; in particular, to ask the question: Does anything corresponding to the inferiority complex, as it is described by psychiatrists and psychologists, appear in normal individuals; and if so, what characteristics does it possess?

GENERAL PLAN OF THE STUDY

The general plan of the study was as follows. It began by accepting the concept of the inferiority complex as it is given in the literature, especially as described by Adler (1) (2). A rating scale was constructed, consisting of 137 traits which, according to this source, would be symptomatic of the condition in question. The scale was so arranged that sometimes the trait as stated, and sometimes its opposite, would be characteristic of the inferiority complex. This was done so that a possible preference for either

positive or negative judgments would not give rise to a constant error in the results.

The ratings were made on a 5 point scale, graphically represented as follows: —— — 0 + ++. The instructions explained that a check in the ++ column would indicate the presence of a trait to a *marked degree;* in the + column, its presence to a *slight* degree; in the — column, the presence of its *opposite* to a *slight* degree; and in the —— column, the presence of its opposite to a *marked* degree. A check in the column marked 0 would mean that the person rated was characterized neither by the trait nor by its opposite.

The subjects were students in introductory courses in psychology in the University of Minnesota. The group included 268 subjects, 120 men and 148 women. Each subject received three copies of the scale, on one of which he was asked to rate himself, and on the other two to secure ratings of himself from two individuals who knew him. The results, therefore, are based on 360 sets of ratings for men, and 444 for women.

In an attempt to eliminate some of the more obvious sources of error, the following precautions were taken:

1. The scales were distributed and returned before the inferiority complex, or the general topic of personality, had been taken up in class, and the blank itself, which was simply headed "rating scale", contained no reference to the inferiority complex as such. The ratings were made, therefore, in ignorance of the point at issue and presumably without prejudice in that particular.

2. The filling out of the blanks was regarded as one of the regular requirements of the course; consequently nearly all the subjects secured the required ratings and returned the papers. The factor of selection within the group approached was thus largely eliminated.

3. The importance of frankness and independence in making the ratings was mentioned in both oral and written instructions. It was, of course, impossible to obtain adequate checks on the extent to which the instructions were followed, but there is internal evidence, which will appear later, that they were not wholly disregarded.

The papers were scored on the basis of the number of symptoms of the inferiority complex indicated; *i.e.,* an individual's score consisted of the number of ratings indicating traits accepted in the literature as diagnostic. A weight of one was given to a rating indicating a slight degree of a symptomatic trait, a weight

of two for a marked degree of the same trait. In other words, the score was an attempt to represent the degree to which an individual possessed the inferiority complex according to the usual definition.

RELIABILITY

The reliability of the scale is indicated by a correlation coefficient of $+.73 \pm .03$ between original tests and retests of 147 individuals after an interval of six weeks.[1] The group included 100 women and 47 men who, when considered as separate groups, gave coefficients of $+.72 \pm .03$, and $+.75 \pm .04$ respectively. The group tested for reliability was not the same as that used for the rest of the study, but the conditions, both in the original tests and in the retests, were the same as those described above.

RESULTS

The principal results of the study may be summarized as follows:

I. Perhaps the point that deserves first attention is that the scores gave approximately a normal distribution[2] for both men and women and according to both self and associates' ratings. This fact has a double significance.

In the first place, it shows that the scale successfully resisted the tendency, so often encountered, for ratings to be concentrated about the socially desirable traits. This tendency, if sufficiently strong, would prevent a distribution and consequently defeat the purpose of the scale. However, the fact that it was not present to a damaging extent does not mean that it was not present at all; certain considerations, to be mentioned later, suggest that it was operative in several situations. But the significant fact in the present connection is that it was not strong enough to obscure individual differences and thus render the scale ineffective.

In the second place, the distribution suggests that the inferiority complex, like most other human traits which have been subjected to measurement, is present in different individuals in different degrees. No individual was rated, either by himself or by his associates, as possessing *all* the traits scored as symptomatic; on

[1] Coefficients of reliability for this kind of material vary from about $+.40$ to about $+.90$. Those most frequently reported when retests are used are between $+.40$ and $+.70$. See references (5), (7) and (8).

[2] The complete data on which the results are based are available in the Department of Psychology, University of Minnesota.

the other hand, no one was rated, either by himself or his associates, as possessing *none* of them. Apparently the inferiority complex is not something which an individual either possesses or lacks, but which he possesses to a greater or smaller extent. This situation is entirely in accord with the assumption that normal and abnormal conditions are continuous.

II. The second point is that the inferiority complex, as revealed by the ratings, corresponded in general outline to the inferiority complex as described in the psychological literature. That is, the traits given by psychiatrists as characterizing this condition, tended to appear more frequently in individuals who (according to the measure employed) were characterized by the inferiority complex, than in those not so characterized. This tendency appeared though the subjects had no way of knowing which traits belonged together theoretically or even that there was any such question involved.

This fact was brought out by regarding the upper and lower quarters of the distribution as representing, respectively, the highest and lowest degrees of the inferiority complex present in the group studied, and by comparing them to see whether the upper group was rated as possessing the traits theoretically characteristic of the inferiority complex to a significantly greater degree than the lower. The rank order which determined the selection of these groups was based on self and associates' ratings, equally weighted.

The following statistical procedure was employed. First, for each of the 137 items and for each of the two groups, the percentage of ratings was computed for each of the five steps of the scale (— — — 0 + ++); second, the differences between the corresponding percentages for the upper and lower groups were obtained; and third, the *direction* of the difference was indicated and its *amount* determined in relation to the probable error of the difference. If the direction was in favor of the upper group, and if the amount was significantly greater than the probable error, the item was considered empirically as well as theoretically characteristic of the inferiority complex.

The general outcome of the analysis was to confirm the concept of the inferiority complex in the sense that the empirical results conformed to theoretical expectations. Of the 137 traits tested, only two were found not to reveal differences in the "expected" direction, and these two were probably cases of overcompensation. The traits in question were "is inclined to be effeminate" or "is

inclined to be masculine" (rated for men and women respectively) and "has wished to be a man" (rated only for women). In these instances the characteristic markings for the group possessing the inferiority complex were those indicating the opposites of the traits as stated. But with these possible exceptions, the traits were uniformly more characteristic of the individuals who, according to the scale, which goes back to the literature, possess an inferiority complex.

There is no generally accepted quantitative standard for determining whether or not a given item reveals a difference sufficiently great to mark it as definitely diagnostic. Some studies have accepted an item as significant if it reveals a difference as large as the standard error or the probable error of the difference; others, if the difference is two or three times its standard or probable error.[3] Of course, even differences between zero and the probable or standard error show a tendency in the "expected" direction, and if these differences, though slight, are in the same direction, that fact is itself significant. In the present study, 98 per cent of the items reveal differences in the "expected" direction; between 80 per cent and 85 per cent show differences at least as great as their probable errors; between 70 per cent and 75 per cent show differences at least twice as great as their probable errors; and between 60 per cent and 65 per cent give differences three times their probable errors, or more. A few of the items bring out differences, eight, nine, and ten times their probable errors, and differences from four to seven times the probable error of the difference are not uncommon. The results are not always the same for men and women, and for self and associates' ratings. Nevertheless they indicate that the traits theoretically constituting an inferiority complex form a consistent set of traits in the sense that any one of them does what the list as a whole does in distinguishing between the groups at the extremes of the distribution,—a fact which is in harmony with the supposition that the traits, taken together, constitute a fairly definite general attitude or tendency to reaction. In this sense, they may be regarded as constituting an empirical justification of the concept of the inferiority complex.

However, it is a justification only in the sense indicated. Since there was no outside criterion against which the scale could be checked, there is, strictly speaking, no justification for saying that

[3] This point is discussed by Freyd (3). Other studies which have used similar statistical procedures are those of Ream (9) and of Miss Hubbard (6).

it measures the inferiority complex, or that the groups compared represent contrasting degrees of that condition. All that can be said is that the items on the scale form a consistent set of traits, capable of revealing characteristic differences between the extremes of the distribution; and that these traits, taken together, correspond to the description of the inferiority complex as given in the psychological literature.

III. The data also give evidence on the particular constituents of the inferiority complex. According to Adler, the core of the condition is a disorder in the self-regarding attitudes—a fear that the self does not measure up to standard, and an intense desire that it should do so. Generated by this situation, or otherwise related to it, is a variety of characteristics, which may be classified as follows:

1. Self-consciousness or self-preoccupation; shown by blushing, embarrassment, delusions of reference, a tendency to be concerned with one's feelings, thoughts, plans, motives.

2. Self-criticism and self-dissatisfaction; a tendency to feel that one is not appearing to good advantage, to be critical and worried about what one is doing or has done, to reflect on possible mistakes and blunders.

3. The "guiding principle"; an ideal or ambition representing a strong desire to assert and distinguish the self, expressing itself in daydreams, high ideals, a tendency to live in the future.

4. Touchiness and oversensitiveness; a tendency to make exaggerated responses to praise, blame, defeat, and disappointment, to care intensely about what other people think of one.

5. General emotional and nervous instability; unresolved emotional complexities and antagonistic trends, fits of despondency, depression, apathy.

6. Persecutory trends of a more or less definite sort; the feeling that one is unappreciated, unjustly treated, that the world in general fails to appreciate and reward merit, and to recognize wrongdoing.

7. Failure of nerve; an unwillingness to put one's self to the test because of fear of an unfavorable outcome, which would be intolerable.

8. Lack of ability in certain lines of overt behavior which demand a fair degree of self-assurance; lack of social poise, inability to carry on enterprises such as selling and executive work.

9. Perfectionist tendencies; an attempt to compensate for felt inferiorities by exaggerated conscientiousness, meticulousness, fastidiousness.

10. Envy and malice; resentment at the good fortune and delight in the bad fortune of others, as affecting one's relative inferiority or superiority to them.

11. Attitudes induced by the "masculine-feminine antithesis"; the feeling that one sex is greatly at a disadvantage in comparison with the other, the "masculine protest".

12.[4] Possible causative factors: slight or serious physical defects; disadvantages due to race, family, economic condition; lack of social, professional, or educational opportunities; particular experiences, such as shocks, disappointments, humiliations; defects, real or imagined, in intelligence, general appearance, moral character, social attractiveness.

This classification is, of course, tentative. The selection of categories is somewhat haphazard and the classes are not, in any precise sense, mutually exclusive. Nevertheless, it affords a convenient device for observing some of the specific trends in the results. If the traits in the scale are grouped under these general headings, and if the average index of diagnostic value[5] is determined for each group, it will be possible to see the *kinds* of traits which are most characteristic of the inferiority complex, according to the empirical results.

Table I gives the indices of diagnostic value for each of the classes mentioned above, for both men and women, and according to both self and associates' ratings. The table suggests several comments.

1. First, it will be observed that the traits which are most characteristic according to quantitative measures are those which, according to Adler are most directly involved in the inferiority complex—self-criticism, self-consciousness, the "guiding principle", and oversensitiveness. To this extent, the specific composition, as well as the general tendency of the concept is confirmed.

2. It will also be observed that in many cases, in fact, in most cases, a group of traits is diagnostic only when it occurs to a

[4] It will be observed that two of the classes do not follow Adler's description closely. The overt behavior symptoms of class 8 were suggested by some of the recent work in applied psychology which indicates that such characteristics as ability to sell are related to certain temperamental traits. Possible causative factors include possible causes other than organic inferiority.

[5] The "diagnostic value" of a trait is its ability to distinguish between individuals characterized by the inferiority complex and those not so characterized. The quantitative measure of this fact is the ratio of the difference it reveals between the contrasting groups to the probable error of the difference; *i.e.*, obtained difference

P.E. difference

marked degree. Only rarely do indices of 2 or more appear in the columns indicating a slight degree of a given class of traits. This is true, not only of whole classes, but of the traits taken separately, and occurs in some of the most clearly diagnostic traits in the list. Evidently their presence to a slight degree is not unusual; in fact, their presence to a slight degree was often the characteristic marking of the *lower* quarter of the distribution.

There is a temptation to say that this indicates that everybody possesses an inferiority complex to a certain extent, but the

TABLE 1

TABLE SHOWING AVERAGE DIAGNOSTIC VALUE OF TRAITS OF VARIOUS CLASSES

		Women				Men			
	No. of traits in class	Slight degree		Marked degree		Slight degree		Marked degree	
Class		Self	Assoc.	Self	Assoc.	Self	Assoc.	Self	Assoc.
1. Self-consciousness	7	1	1	7	6	2	1	5	3
2. Self-criticism	11	1	3	7	5	2	3	5	2
3. Guiding principle	11	..	1	6	4	..	..	4	2
4. Oversentiveness	8	..	1	6	5	..	2	4	2
5. Instability	20	2	2	3	4	3	2	3	1
6. Persecutory trends	6	1	1	3	3	2	1	2	2
7. Failure of nerve	13	1	1	2	3	3	1	3	2
8. Lack of special abilities	14	1	1	3	2	2	..	3	1
9. Perfectionist trends	13	..	..	4	4	..	..	1	..
10. Envy and malice	8	1	1	2	2	1	1	2	1
11. Masc.-fem. antithesis	5	1	..	1	1	..	1	..	1
12. Possible causes:									
(a) Physical defects	6	2	2	2	1	3	1	3	1
(b) Specific experiences	3	1	2	4	1	1	1	1	2
(c) Environmental causes	6	..	..	..	..	2	..	2	..
(d) General defects	6	..	1	2	1	1	1	1	1

validity of that statement depends on the definition of the term. If an inferiority complex is indicated by the possession, to a slight degree, of the traits given as its characteristics, the ratings suggest that it is a very widespread condition. But if the term is defined quantitatively as the possession of the traits in question to a greater degree than is found in the group generally, its presence could be determined only after group norms had been established, and the condition would be considered an inferiority complex only when it exceeded the group average to a significant degree. Still, it is interesting to note that, in this study of the inferiority complex, the *possession* of the traits characteristic of the condition represented the average condition; whereas in a study of introversion, made in very similar conditions and on a very similar group of subjects,(4), the average was on the side

of the *opposites* of the traits in question. Both studies suggest the desirability of establishing group norms in these respects.

3. The traits which rank lowest on the list deserve attention as those which, according to empirical results, tend less strongly to confirm the general concept. It is significant, however, that the differences they reveal tend uniformly in the expected direction, even when the amount of the difference is slight. Furthermore, these groups, upon analysis, disclose tendencies which give additional information on the prevalence of some of the trends commonly thought of as characteristic of the inferiority complex.

The perfectionist group reveals a particularly interesting condition. Its failure (except in the case of women, and when it occurs to a marked degree) to give significant indices of diagnostic value is due, not to the fact that the upper quarter of the distribution does not tend to possess the traits comprising this class, but that the lower quarter tends to possess them also. The difference between the comparison groups, therefore, is relatively slight. Possibly the traits which constitute this group—*e.g.*, "is conscientious; will do too much rather than too little", "gives careful attention to details", etc.—are considered desirable and tend, for that reason, to be appropriated by individuals not troubled by the inferiority complex.

The group representing envy and malice shows the other side of the same tendency. These traits are so obviously undesirable that there seemed to be a definite resistance to attributing them either to one's self or to one's associates. The result was that the traits did not give an adequate distribution for either the upper or the lower group. The same tendency appeared in the class representing failure of nerve. Theoretically, the traits in this group ought to show high indices of diagnostic value, and it is true that some of them do so. But others fail to give a distribution, probably because they seem undesirable, and thus obscure individual differences.

Similarly, the ratings on the "masculine-feminine antithesis" failed to give an adequate distribution. The data here are rather complex, but indicate, in general, that the ratings represented the conventional attitudes rather than genuine individual reactions. The traits previously mentioned as the only ones which gave differences counter to the "expected" direction were in this group; and as has been suggested, the ratings on these traits—"would like to be a man" (rated for women) and "is inclined to be effeminate" or "is inclined to be masculine" (rated for men and

women respectively)—are possibly instances of overcompensation, in indicating that the opposites of the traits as stated are characteristic of the groups representing the inferiority complex.

The significant fact in the group of possible causes is that the ratings showed any differences at all. If the conditions considered actually represented the roots of the trouble, individuals would be really sensitive about them, and the ratings would, for that reason, be peculiarly liable to distortion. Still, it is interesting to note that the traits in this class which seemed most diagnostic were physical defects, serious and slight, and particular experiences, such as shocks, humiliations, and disappointments. However, it is impossible to tell whether these conditions were objectively more frequent in the group of whom they were reported, or simply subjectively more striking. In fact, the data on these points must be taken with many reservations. In the first place, greater frequency in the upper group cannot be uncritically translated into a causal relationship; and in the second place, the greater objective frequency is open to question, since it is just here, in connection with the supposed roots of the complex, that the ratings would be most distorted by feeling, prejudice, and defense mechanisms.

Perhaps it is well to repeat at this point that the classification on which this discussion is based is intended as nothing more than a convenient device for presenting the trend of the results. It should not be permitted to obscure the fact that the diagnostic value of a particular trait and of the group to which it belongs do not necessarily coincide. For example, a trait may be highly diagnostic in itself, though the group with which it is classified is not diagnostic as a whole. Possibly the most objective way of giving the principal characteristics of the inferiority complex as empirically determined, is to list in rank order the traits which possess the highest indices of diagnostic value, when the rank order is determined by the *average* diagnostic value for both sexes, and according to both self and associates' ratings. The following traits are the first 20 items on such a list.

1. Is self-conscious.
2. Pays serious attention to little things that may have reference to himself.
3. Is sensitive to blame.
4. Worries about little things he has said or done,—slips, breaks, social blunders, etc.
5. Is given to self criticism.
6. Is sensitive to praise.

7. Daydreams.
8. His feelings are easily hurt; is touchy, oversensitive.
9. Has a secret ideal or ambition.
10. Worries about his ability to succeed in fields where he most wishes to succeed.
11. Is sometimes oppressed in the midst of an enterprise, by a sense of his unfitness to carry it through.
12. Analyzes his own motives, feelings, likes, dislikes, etc.
13. Often feels that something he has said or done has hurt someone's feelings or made enemies.
14. Compares his abilities and achievements with those of other people.
15. Is dissatisfied with his progress and achievements up to the present time.
16. Is easily embarrassed.
17. Is given to remorse and regrets.
18. Lives in the future to a considerable extent.
19. Is embarrassed by the memory of scenes and blunders long after they have happened.
20. Hesitates to put his abilities to the test.

It will be observed that, however they are classified, these traits clearly indicate a preoccupation with the self, a desire that it shall excel, an anxiety lest it may not do so, and a sensitiveness to everything that concerns its standing.

IV. Sex differences and differences between self and associates' ratings have been mentioned incidentally, and here too the facts are, on the whole, in harmony with theoretical expectations.

TABLE II

TABLE SHOWING DIFFERENCES BETWEEN THE RATINGS OF MEN AND WOMEN, AND BETWEEN SELF AND ASSOCIATES' RATINGS

Central Tendencies

	Men (120 cases)		Women (148 cases)	
	Average	P.E. aver.	Average	P.E. aver.
Self-ratings (1 set for each case)	33.95	.93	40.30	.87
Associates' ratings (2 sets for each case)	23.70	.53	28.65	.57

Differences

	Diff.	P.E. diff.	Significance of diff.
Between men and women:			
(a) Self-ratings	6.55	1.27	5.16
(b) Associates' ratings	4.95	.78	6.35
Between self and associates' ratings:			
(a) Men	10.25	1.06	9.65
(b) Women	11.65	.95	12.26

Table II shows that there is a significant difference between the sexes in the degree to which the inferiority complex is indicated. Women are more liable to this condition than men, according to both self and associates' ratings.

It will be noticed, however, that there is a greater difference between self and associates' ratings than between those of men and women. In both sexes, self ratings indicate the inferiority complex to a distinctly greater degree than the associates' ratings. Evidently individuals are more likely to consider themselves subject to this condition than to be judged so by their associates. It is interesting to note that this tendency is somewhat more marked in women than in men. Perhaps this simply means that according to present standards, it is a more serious matter for men than for women to recognize, even in their judgments of themselves, any indications of inadequacy. This in turn suggests that, again because of present standards, associates would be more hesitant in attributing any indications of this attitude to a man. It is quite possible, therefore, that the sex differences mentioned above may be largely influenced by such factors. Different standards for the sexes may induce somewhat different attitudes when men and women are being rated.

V. The data also give evidence of overreaction and overcompensation. The upper group tend definitely toward double plus and double minus ratings, whereas in the lower group, zeroes, single pluses and single minuses are the rule.

This result may at first seem an artefact of the experimental conditions. Since subjects receiving double plus and double minus ratings would tend to receive high scores because of that very fact, and thus be included in the upper group, that group would naturally be found, upon analysis, to possess more double plus and double minus ratings. But this interpretation is rendered improbable by the fact that individuals in the upper group tend more strongly than those in the lower group to mark *both* extremes of the scale for a given trait,—not only the extreme generally considered characteristic of the inferiority complex, but the opposite extreme as well,— a condition which obviously could have nothing to do with placing individuals in the upper quarter of the distribution. In other words, though a marked degree of a given trait is characteristic of the group representing the inferiority complex, its opposite, too, may appear more frequently in the same group. In a few cases, both ends of the scale give indices of diagnostic value sufficiently high to mark them as characteristic of the inferi-

ority complex. These cases are rare, however, and when they occur are found to be more highly diagnostic in the "expected" direction than in the opposite one.

The characteristic ratings of the lower quarter of the distribution are nearer the middle of the scale. It is significant that this group is not rated as possessing the extreme opposites of the traits characteristic of the inferiority complex, but slight degrees of them, slight degrees of their opposites, or the mere absence of the traits in question, as indicated by single plus, single minus, or zero ratings. The contrast between the two groups in this respect probably means that the individuals who are insecure in their self-regarding sentiments are peculiarly sensitive to any particulars in which they differ from most people; that they exaggerate these differences, whether they regard them as favorable or unfavorable, and thus impress themselves and their associates as "different" and "extreme". It is perhaps characteristic of a normal, matter-of-fact attitude to consider one's self as, in the main, like other people.

General Criticisms

The evidence considered so far, if taken at its face value, would constitute a confirmation of the concept of the inferiority complex. On the whole, there has been a rather consistent conformity of empirical findings with theoretical expectations. But the situation must be interpreted in the light of at least three possible criticisms.

First, it must be remembered that only in a rather roundabout sense, can the scale be called a measure of the inferiority complex. There was no outside criterion against which its validity could be checked. Only as the scale goes back to the accepted definition, and only as this goes back to clinical experience, can there be said to be a correspondence between the scale and the thing it tries to measure. The testing of the scale itself,—*i.e.* the attempt to determine the diagnostic value of its items trait by trait,—shows primarily that it is self-consistent; and secondarily and by inference, since the scale was constructed along the lines of the inferiority complex as described in the literature, this self-consistency means that the predicted pattern is found in the observed conditions. Only in this sense,—but rather definitely in this sense,—does the scale represent the inferiority complex.

In the second place, it must be recognized that the measures were obtained by means of ratings and that ratings are far from

being completely objective measures of the traits in question. Instances have been cited to show that, in some cases, ratings were influenced by conventional attitudes (those on the "masculine-feminine antithesis"), and in others by approval or disapproval (those on envy and malice, and on the perfectionist tendencies). Yet there is internal evidence that the results were not entirely distorted by subjective factors. The fact that the scale as a whole, and that most of the individual traits gave the normal distribution indicates that there was some resistance to such influences. And the fact that there was some correspondence, and yet not perfect correspondence, between the various ratings on the same individual, suggests that there was both independence and agreement in them. In particular, the coefficient of reliability indicates that, whatever the scale was measuring, it was not a momentary, chance attitude, but something sufficiently definite to withstand a lapse of time and whatever change of condition that circumstance would involve.

Both these criticisms have been implied before. A third, not yet mentioned, but possibly more significant than either of them, is that the self-consistency of the list may be due to the fact that it is made up of traits which go together for some reason not connected with the inferiority complex as such—for example, because they represent desirable or undesirable characteristics, or because they are all neurotic traits and that neurotic traits tend to go together.

That the factor making for consistency is not social desirability or its opposite, is rather clearly indicated by the tendency for traits like malice and envy, which are plainly objectionable, and the perfectionist trends, which are generally approved, to characterize the same group. The second possibility, that the list may represent a general neurotic tendency, is a more serious matter. The principal points which can be urged against it at present are: (a) that not only the general tendency, but the specific pattern and the relative importance of its parts are indicated in the empirical results in conformity with theoretical expectations; (b) that the most objective way of selecting the traits which are most diagnostic includes those which have usually been regarded as the central and essential features of the condition; and (c) that in a study of introversion (4) carried on by means of the same procedure, a different set of traits ranks highest as most representative of this tendency, again corresponding to theoretical demands of the concept in question. In this sense, the available evidence is in favor of specific patterns. However, though the question of the

existence of a general neurotic temperament, or of specific patterns of neurotic behavior, or both (since the possibilities are not incompatible), is beyond the scope of the present discussion, it remains a relevant matter and must be taken into consideration in interpreting the results.

Summary

With the reservations indicated, the outcome of the experiment may be summarized as follows:

I. In general, the results confirm the concept of the inferiority complex, in the sense that the empirical findings, brought out by a scale constructed according to the accepted definition and description, correspond to theoretical expectations. There are three lines of evidence which support this statement.

(1) A statistical analysis of the scale, item by item, shows that it is an assemblage of empirically *consistent* traits,—that each trait acts in harmony with the scale as a whole in distinguishing between the extremes of the distribution. There is evidence, therefore, of the existence of a related set of traits which, taken together, correspond to the generally accepted description of the inferiority complex.

(2) An analysis on the basis of the different *classes* of reactions, confirms theoretical expectations as to the specific pattern involved; the groups of traits which are theoretically most significant are, on the whole, those which are empirically most characteristic of the group representing the inferiority complex.

(3) The 20 items which possess the highest quantitive indices of diagnostic value are those which indicate the preoccupation with and anxiety for the self which would be expected according to the usual definition.

II. But whether or not the scale is taken as a measure of the inferiority complex, there are several statements which may be made concerning the reaction it measures, whatever its specific nature:

(1) It is not something which an individual either possesses or lacks, but which he possesses to a greater or less degree.

(2) It is a condition to which women are more liable than men, according to both self and associates' ratings.

(3) Individuals are more likely to consider themselves characterized by this condition than to be judged so by their associates.

(4) Individuals who are subject to the condition to a high degree, display a tendency to overcompensation and overreaction generally.

REFERENCES

(1) Adler, Alfred. The Neurotic Constitution, translated by Bernard Glueck and John E. Lind. New York: Moffat, Yard and Co., 1917.
(2) Adler, Alfred. Study of Organ Inferiority and Its Psychical Compensations, translated by S. E. Jelliffe. New York: The Nervous and Mental Disease Publishing Co., 1917. Nervous and Mental Disease Monograph Series No. 24.
(3) Freyd, Max. The Personalities of the Socially and Mechanically Inclined. Psychological Review Monograph Series, Vol. 33, No. 4, 1924. Whole No. 151, pp. 1–101.
(4) Heidbreder, Edna. Measuring Introversion and Extroversion. Journal of Abnormal and Social Psychology, Vol. 21, No. 2, July, 1926, pp. 120–134.
(5) Hoitsma, Ralph K. The Reliability and Relationships of the Colgate Mental Hygiene Test. Journal of Applied Psychology, Vol. 6, No. 3, July, 1925, pp. 293–303.
(6) Hubbard, Ruth M. The Reliability of the Freyd Interest Analysis Blank. Journal of Educational Research, Nov., 1926.
(7) Hubbard, Ruth M. Interests Studied Quantitatively. Journal of Personnel Research, Vol. 4, Nos. 9–10, January, 1926, pp. 365–378.
(8) Mathews, Ellen. A Study of Emotional Stability in Children. Journal of Delinquency, Vol. 8, No. 1, January, 1923, pp. 1–140.
(9) Ream, M. J. Ability to Sell. Baltimore: Williams and Wilkins Co., 1924.

WOMAN AND THE MASCULINE PROTEST *

By HERBERT AUSTIN AIKINS, PH.D.
WESTERN RESERVE UNIVERSITY, CLEVELAND

ALFRED ADLER'S book on The Neurotic Constitution [1] was preceded by his Study of Organ Inferiority. The object of the earlier work was to show how bodily weakness and the discomfort it causes often lead to conscious effort that may well result in even an overdevelopment of the organ or function in question—the stuttering Demosthenes becomes an orator; the weak-chested Roosevelt, a cowpuncher and rough-rider.

The main theme of The Neurotic Constitution is what Adler calls the "masculine protest". He says the most universal contrast in all the world is that between male and female, and that in all popular thinking, from childhood up, the female is conceived of as an incomplete, emasculated, or mutilated male. Her intricate anatomy unrecognized, she is merely thought of as being without the organs of masculinity, without the enterprise and courage that go with these organs in the well-developed male, and therefore naturally destined to weakness, inferiority and ignominious subjection.

This contrast between the potent, aggressive male and the impotent female is so widespread and so natural that when anything gives an individual a sense of weakness, inadequacy, or incompleteness, he seizes upon the contrast and begins to suspect that he is lacking in virility, emasculate, and therefore more or less womanish and effeminate—a thing so unendurably disgraceful that his whole life becomes one intense, unremitting effort to prove to himself and all the world that this is not so—he must show at any cost that he is a real he-man, a bull moose with antlers. That is the "masculine protest" and when one is obsessed with it he soon develops the neurotic constitution—blind to everything in life but the everlasting contrast between inferiority and superiority, always determined to be the superior male, always tense and overbearing except when he is exhausted, and, of course,

* Condensed from a paper read before the Cleveland Philosophical Club on Dec. 20, 1921. The personal nature of the material quoted made publication at that time impossible.

[1] Translated by Bernard Glueck, M.D. and John Lind, M.D. Moffat, Yard and Company, 1917.

always subject to the physical symptoms that such a purgatorial life involves.

Adler does not always put things simply, but this is my understanding of his theory. Some of the pictures he leaves of the masculine protest in action are vivid, clear, invaluable. And he is certainly right when he says that no amount of positive achievement will ever satisfy a deep-seated determination to prove that one is not, as he suspects, inferior in masculinity. A successful undertaking may be followed by momentary gratification. But soon the old suspicions about oneself steal back and the labors of Hercules must be renewed unendingly.

How at last the man is to find peace for his soul is not our problem here. It will depend on the real source of his anxiety and the actual facts in his individual case. But it will do no harm for anyone to make his problem as specific as possible and to remember a few elementary truths such as the following:

(1) The connection between visible physique and energy or courageous virility is not so great as one may imagine. There have been courageous and efficient queens, and dynasties have been founded by eunuchs.

(2) Large variations in sexual type are always to be expected—that is the way nature works; and there is no reason for calling one particular combination of qualities any less normal than another if it can maintain itself with reasonable comfort. "Managing men and mothering maids" are not the only kind of useful or admirable people.

(3) An excess of masculinity or any other quality may be quite as harmful as a defect. In a society organized for average people it is often a horrible nuisance.

(4) In spite of the conventional fictions of swaggering adolescent gangs, it is pure nonsense to speak of one sex as any better or any worse than the other. Both are indispensable, and we may assume that in the main the secondary characteristics which have come down to us are what they are because they have been useful.

(5) Natural endowments are not virtues in themselves. It is not what nature gave us to begin with that makes us admirable or despicable, but the kind of character we build on these natural foundations. Nobody wants to be a mere brute, however powerful.

(6) Sex is not man's highest gift. In a rational being poise and common sense are worth more than mere marked masculinity, and vastly more than a life warped and obsessed by a grim determination to achieve or mimic it at the expense of everything else. Whether one be large or small, fearless or timid, with or without

various glandular possessions, his business in life is not to prove that he is something radically different from what nature made him—an ant doesn't have to play the elephant—but, being what he is, to meet situations as they arise, adapt himself to them as best he can in his own way, not somebody else's, and save some of his energies for reasonable perspective and the joy of living.

In short, the only cure is to be found in the abandonment of the whole false scheme of values and the struggle based upon it. There are better gods than a bull, and the peace that passeth all understanding will not come to one of its tortured worshippers until he learns to emancipate himself from the lingering influence of blustering youth and tells himself every day in every way, not that he is getting closer and closer to the bull ideal, but that that or any other narrow, stereotyped ideal is a nuisance and a menace. Life is, as Spencer put it, a "moving equilibrium", a process of continual readjustment, a growth; and the ideals that govern it must also be capable of growth and readjustment.

So much for the masculine protest in men. But what about women?

An accepted way of thinking may be useful without being true. Boys can never be mothers, and if a period of contempt for girls and girlish ways helps to make them better and more manly members of an adventurous brotherhood, it probably serves a useful purpose. But that does not prove that in reality women are only half-made men who ought also to belong to the gang if they only had stuff enough in them, or that normal feminine timidity and dependence are purely negative qualities. They are not. It is as necessary for the next generation that prospective mothers should lie low as that fathers should go forth to slay the enemy and bring back the spoils. It is necessary also that some of their energies should go to nutritive functions rather than to muscular strength. If feminine qualities were mere defects due to lack of masculinity, we should expect them to be as well-marked in little girls as in their mothers and older sisters, and still more marked in women who have been unsexed entirely. But this is precisely the reverse of the truth. A really feminine quality is just as positive and useful as a masculine. It comes with sex development and has nothing to do with incompleteness. And as for the gang, its ultimate function is to defend and advance the several homes over which the girls whom it excludes for the moment are destined to preside.

Nevertheless, the gang's conception of girls and women as somehow incomplete and inferior exists, and Adler believes that a neurotic woman is just as much dominated by the masculine

protest as her neurotic brother; she feels inadequate, she suspects the cause to lie in a disgraceful lack of masculinity, and so she firmly sets her teeth to prove in many devious ways that after all she is a man at bottom, and not a proper person to endure the ignominious fate of women. That, he says, is the essence of her neurosis; and from his point of view all women are neurotic.

There can be no doubt that women sometimes identify the good with the masculine. St. Teresa, for example, speaks of heavenly visions in which the divine hand supplies her with "nourishment", "energy", and "bodily strength", uproots her vices, and fills her with "masculine courage and other virtues instead", as though of course the masculine were the virtuous. And in using her to illustrate a human type, James enumerates characteristics that stand out in Adler's pictures of the masculine protest—"tenaciously aspiring", "the bustle of her style as well as of her life", "her voluble egotism", and so forth.

Is Teresa, as she here pictures herself, typical, though to be sure an extreme type, of all her sex? Does Adler's universal contrast between complete and superior man and the incomplete and inferior woman so permeate the spontaneous thinking of every woman that, like Teresa, she has to think of her perfections or imperfections in terms of sex and cannot feel inadequate or inferior without some trend toward the masculine protest?

Passages like the following in Adler's book—written in Austria before the war—leave the impression that this is true of all women, without exception: the iron has entered into their souls, they all identify worth with virility, and they all want to prove that they are men, though, of course, not with the fierce determination of the most obsessed neurotic.

"One of the facts, which, thanks to my way of viewing the subject, I was able to explain, was the less well-known feeling of inferiority common to all girls and women which is due to their feminine rôle in contrast to the masculine. Their soul life is thereby so altered that they constantly betray traits of the 'masculine protest' and, in truth, usually in circuitous form, in apparently feminine inferior traits such as are described in the previously cited group (p. 213)."

"In the memories of female patients this place is occupied by the feeling of inferiority, by the neurotic terror of the feminine rôle (p. 395)."

" 'The essential of all feminine dialetic is said to be: to wish everything different', announces E. Fuchs in Die Frau in der Karikatur. In dress, morals, attitude and movement something

bizarre is always revealed, usually with some pretext . . . the effort is constantly made (it is hard to tell whether Adler is here speaking of all women or only the neurotic) to make up, down; right, left; behind, before; because the guiding fiction demands symbolically the turning around, that is, the changing from feminine to masculine (p. 439–440)."

"The guiding fiction of equality to man comes to expression in some way or other to all women and girls. . . . Hence it is essential in the analysis of all neurotic female patients to discover at what point they protest against their femininity. . . . The attitude and habits of neurotic women are often so masculine that it is noticeable from the first moment (p. 288–9)."

Some years ago I told a college class of friendly girls what Adler had said and then asked each of them to write an account of her own experience with the sense of inferiority. All of them, I think, complied with my request, and I give all their answers.

Number One (who is now, 1927, well started on a program of "raising a family of six") admits the masculine protest as follows:

> The masculine protest was very strong in me up to the time I was thirteen. I always played with boys, wore an Indian suit with trousers and utterly despised sissy girls and spoke of them with scorn. When I was thirteen and began to understand a little of what womanhood meant, I suddenly became very proud of the fact that I was a girl. I am perfectly sure that I haven't felt a bit of the masculine protest since, but I have always been glad that I am a woman. I have been subject to an inferiority feeling of another sort, however.

Number Two tells how the protest was aroused in her. But you will notice that what hurt her was not sex difference itself, but exclusion based upon it:

> Until I was about ten years old I had to my present knowledge, no "feeling of inferiority" in regard to the masculine half of the world. Up to that time I played boys' games with the boys, as well as girls' games with the girls, and what is more significant, the boys were forced to acknowledge my equality and even superiority in many of their sports. I could shoot straighter than many of them, run faster, and in skating races I was not the last by any means. I remember one instance where they—boys older than myself—actually expressed their approbation and pride in my feat of outjumping a visiting cousin of the acknowledged leader of the gang, in a lot where a house was under construction. I smile now to think of that night. There I was quite "dressed up" in a light summer dress proudly being escorted to the front yard of one of the members of the "Blank Street Bunch", with now this youth, now that, offering to carry a shawl or place it around my shoulders, as though I had just performed some lady-like rhapsody on the piano in the ball-room, instead of being the winner of a broad-jump contest in a vacant lot.
>
> It was when I was eleven that the boys formed a troop of some kind, with club rooms and secret signals, in short all the accessories that would drive a girl—up to this time "one of them" and now an outsider—crazy, that I began to realize things were changing and would change even more. It took me a long time to realize that instead of wanting a girl to be like them, boys wanted them different—they wanted to display their strength, to be the master. It was against my bringing up. My father had developed my liking for active out-of-door sports and I resented horribly being put on a "cushion to sew a fine seam".

With Numbers Three and Four it is much the same, except with them it was not a matter of exclusion by the gang but of prohibitions imposed by elders:

I used to have a sense of inferiority when I was younger, says Three, wishing all the time I was a boy so I could do the things they did without being reprimanded. This sense disappeared long ago, however. One that I have now is in regard to cooking. Whenever I get dinner I always sit down to table with a sense of inferiority, especially if my mother is there and tells me the food tastes good. Sense of inferiority when playing cards, even after I have played the game a long while.

On Number Four shades of the prison house seem to have closed after a period of freedom:

When I was small I never wished I was a boy, because I always played with boys and did as they did, but when I was told not to do the things that they did because I was a girl and it was not lady-like, I craved to be a boy, especially when I was told not to whistle on the street.

But with her also the desire to be a boy seems to have disappeared with the desire to do particular boyish things. The sense of inferiority that bothered her at the time of writing came when she 'had not pep and life enough to do what the others around her were doing, though at times she tried to outdo them!'—another case of living up to her associates.

This brings us back to Number One, the rest of whose statement is as follows:

It [the other sort of feeling of inferiority] began very definitely in the fall of —— and ended as suddenly in the fall of ——. For those three years I felt inferior in every respect to everyone else, and was utterly miserable. This was due to a variety of things. 1. Lonesomeness caused by going to a city high school where I was unknown and entirely "out of it". 2. Actual physical inferiority due to a bad case of anemia. 3. A series of unfortunate events at home. 4. Worry about college entrance. I decided very late in my high school career to go to college that required entrance exams, and I had dropped Latin and had to make it up again. 5. I was homesick, too. These things got me in the habit of feeling inferior, and made me do things that in turn made me feel still worse.

With all four of these girls the masculine protest, such as it was, seems to have disappeared entirely by the time of writing or to have been overshadowed by something else. (Number Two does not say so in the paper, but I know it to be true.) As to the remaining fourteen girls, only one of them makes any allusion whatever to a sex difference, though it was that particular form of supposed inferiority that started the whole discussion. Three of the fourteen deny all sense of inferiority of any kind. The remaining eleven, who admit it, attribute it to almost everything except sex.

Thus my eighteen girls are unanimous (though their papers were written separately) in denying or ignoring any present sense of sex-inferiority, though Adler makes such a feeling universal among women.

How shall we account for the difference? Are all my girls either dishonest or incapable of reasonably reliable introspection? I am quoting all the papers in enough detail to let the reader judge for himself.

Or is a sense of sex-inferiority present in all of these reasonably normal persons, but so deeply repressed that nothing but a profound analysis can discover it? Perhaps so, if Adler's observations and generalizations are infallible. But if that is true, why do the writers seem so normal, and why are they so frank about other things that hurt? Why should one particular kind of complex be so much more deeply repressed than all others?

Or is it possible that what Adler found in his patients and in the one girls' school that he studied may not be true of other women outside the sphere of his observations? He seems to assume a single humiliating feminine rôle the same all over the world. But is not much of the rôle that woman plays a matter of convention—one thing in judaism * or in the old militarized Austria and quite another in America, where Münsterberg protested long ago against the feminization of education? Physicians are not unlikely to make reckless generalizations when they get into the psychological field.

As to my own eighteen witnesses, I don't attach much importance to their unanimity. One indubitable exception would have been enough to disprove the generalization Adler seems to make. My papers come from members of an urban separate but coördinate college for women most of whom take part of their work on the campus of a men's college across the street. But their "activities" are usually separate. In a rural co-educational institution the report might have been different, and still more different in a factory. It would be different also in a group of older unmarried women who find themselves losing all hope of a home and children of their own. But with them, as a young woman once put it, the "protest" is not against femininity, but against unsuccessful femininity.

* "I had, all my life, thought of the womanhood in me as something rather to be deprecated; a man, I knew, of my faith, must absent himself from his wife, as from defilement, at certain holy times of his life. And, always, she must humbly beg God to pardon her that she is a woman. Had I not read, in the prayer book, the word my brothers, my father, all my uncles, spoke daily—thanking God that they were not women?" Leah Morton, "I am a Woman—and a Jew", 1926.

May it be added that where a masculine protest really is present, analysis may often show that the patient is mother-bound and envies men because they seem to be free. She thinks she wants to be a man, but she really wants to be weaned and cut the apron strings. Where women are supposed never to be entirely grown up and independent ("femme couverte") a patient of either sex with an infantile fixation and longing to be free may easily imagine that the trouble lies in a lack of masculinity.

Now let us return to our students to estimate the reliability of their reports and to see what may take the place of Adler's sex-difference in a young woman's feeling of inferiority.

Of the three who deny all sense of inferiority Number Five hopes that not feeling inferior does "not put her in a class with a snob".

Number Six tempers her denial of what she calls any marked sense of inferiority by an admission that quite often she has had jealous fits, now pretty well overcome, that may have been caused by such a sense. She adds, "Being an only child, and a considerably petted child, I was inclined to have a sense of superiority rather than inferiority, which perhaps kept me from it."

Number Seven elaborates the denial already referred to. But note how she discusses the sense of inferiority "among girls" without really ever touching the sex question at all; for she says nothing to suggest any kind of comparison with boys. Note also what she says about her father. Is her own healthy-mindedness a reflection of his joviality?

I don't believe very much in this feeling of inferiority being prevalent among girls. I myself have to down a feeling of superiority more than trying to rise above any inferiority feeling, but yet no one has ever thought me conceited nor self-centered, though my family consider me selfish. When talking to girls whose parents happen to have more money than mine or who are wearing more expensive clothes, I don't experience any crawl-into-my-shell feeling. If they are well-bred they are even nicer than other girls, and if they are silly snobs they bore me and I leave them with a feeling of pity that they don't know any better. I don't feel inferior to the Dean when I speak to her, because she holds a responsible position; perhaps some day I may hold a better one. The President is as kind and jovial as my own father, and dispels any feeling of inferiority.

Number Eight, a diminutive young lady, starts with a bold denial but soon reveals her sore spot.

I hardly know what is meant by a sense of inferiority. I am not sensitive in the least and never had a feeling of "having to make good". In fact, I am very easy-going and let things go along as they will. This may be largely due to the fact that I have always been petted and spoiled both by my family and by strangers. I have always had a great many friends and people have sought me for a friend rather than my making any effort to gain their friendship.

The only element of inferiority that is in my make-up comes out when I go to complain about anything in a store or to attend to anything rather disagreeable in nature. I have a feeling of desiring to yell out, "I am a senior at college!", and to tell the person not to look at me as though I were a little girl. This is largely due to the fact that the person to whom I am complaining will often ask me to send my mother in, or make some such remark. I even feel this way when talking over the telephone and get so excited I can hardly talk.

Up to two years ago I could not talk to older people. This, I think, was a sense of inferiority. I always thought that they were not the least bit interested in what I was saying and I would try so hard to think of what would be fitting and proper to say that I wouldn't talk at all. I think this was due to the fact that my mother thought that "Children should be seen and not heard."

Number Nine says simply that she is inferior in the power of composition, for her thoughts get in a jumble the minute she takes a pen in hand, and she doesn't know why.

Number Ten tells of her paralyzing embarrassment when she has to speak to a professor on any social occasion, though her friends consider her a good mixer.

Number Eleven feels at times that she has not a good memory for certain types of studies.

> And for that reason I am under a certain strain all the time to try to make good, to do better than the majority in things scientific and mathematical and to show them that in such I am superior to them and that my lack of memory is not lack of intelligence. Maybe I am wrong, but I can't help feeling that I do have more ability to reason and think things out for myself than those who are possessed of the poll-parrot tendency.

Number Twelve had felt inferior to an older sister who seemed to revel in housewifely tasks and was praised as "a regular little housewife". "I felt that there was something wrong with me—that she was better than I. I have found out since that she felt the same way about my excelling at school."

Number Thirteen, who was doing office work to help pay her way, tells of friendships sacrificed because she was ashamed of her house. It did not have modern improvements.

Number Fourteen had to live down the virtues of her family:

> My father was a teacher in the school which I attended and my brother had gone through the same school making high grades, being good, and always doing what was expected of him. He was brilliant scholastically and his career was a bit meteoric. Naturally when I came along everyone expected me to do the same thing. The feeling that I was a professor's daughter and therefore something good and studious prevailed among my classmates. This sense of undesired superiority thrust upon me gave me instead a keen sense of inferiority, and in order to bring myself to a plane of equality with the other children, I spent all my days devising means to frustrate all expectations of supposed superiority.
>
> During my years in the grades, I was always being sent, along with other naughty children, to my father for discipline. I verged on the impudent, I was mischievous and always plotting for the discomfort of my senior teachers.
>
> In Normal School I occasionally cut classes just to show that being a professor's daughter meant nothing in my young life. I wished to overcome the inferiority thrust on me by being Professor X's daughter and to assert my personality as M—— X——.
>
> I came out here at the instigation of one of father's friends who has greatly overestimated my ability; because I am my father's daughter he expects great things of me. The mere fact that he expects great things of me calls up that old instinct inculcated in me to dash people's expectations. My sense of inferiority is still predominant.

The rest of the stories are more complex. Number Fifteen as a child had felt like an ugly duckling. Someone had said that she had freckles and large teeth, and her brothers and sisters were too old to pay much attention to her. Later in a city high school, she had felt somewhat inferior because she came from a small town. She had not much money to spend on clothes, though she

had always gone around with the people she wanted to; and there had been friction at home and discussion about whether she appreciated college and it was worth while to send her "and all that". "Therefore I have worked every summer for the last four years and sometimes I get discouraged wondering why I keep at this continual striving to 'make good' and if it's all worth while."

Number Sixteen was supersensitive, resenting criticism and always feeling "out of it", overconscientious, and subject to fits of depression. These feelings she has to a certain degree overcome and advises as a remedy some intensely interesting work.

Numbers Seventeen and Eighteen have written remarkable documents well worth quoting at length. Says Seventeen:

I have always had a sense of inferiority as far back as I can remember. I have been very sensitive and conscious of my clothes, my home, my actions, such as my walk, laugh, carriage. I feel embarrassed when in the presence of other people because of it. My mind is so absorbed in wondering whether they are criticizing the clothes I wear, the way my hair is combed, the subjects of which I am talking and the words or English which I use, that I can think of nothing interesting to talk about. I always feel inferior because I feel I cannot carry as interesting a conversation as my friends seem to do.

This feeling of inferiority I have known to be such a hindrance to me, mentally, socially and physically, that I realized that it must be overcome. So for years, about five years, I have been studying it away back to my childhood days. I can recollect a time when my laugh was criticized by a dear chum. I remember the companions who were with me, the exact spot where the remark was made during our walk, and just how I felt. I go through the same emotions when I think of it. My reaction to the memory is exactly the same as that to the event or incident at the time. I remember similar scenes in connection with my appearance. My hair was in corkscrews or pigtails. My dress was too short or too long. I remember distinctly the occasions when the remarks were passed, some before seven years, some after. The effect on me was so strong that I became a nervous wreck. I knew not what I was doing for a time. I walked around holding my arms and hands in the position a dog does when he is sitting up for some choice victual. I would sit and look at people, simply stare with practically nothing in mind. I could not react in a normal way to anything about me because I was in a nerve-wracking condition.

Later on when little conditions arose in my life that were humiliating, I strove continually to hide them and was always wondering if people knew about them and were censuring me.

Now, because of my study of this early period and recognition of its similarity to my present feelings and reactions, I have been able to get rid of a great deal of the obsession and I hope to entirely rid myself of it in time by simply trying to act naturally, and to realize that my conditions are really not so important but only a common thing in this world."

Number Eighteen:

Only my interest in scientific research could induce me to make the following confession. Most of it merely amuses me now, but some of it touches spots that are still a bit raw, and I'd be just as happy if they weren't exhibited to the general public of the psychology class. My whole life has been dominated so completely by the one idea of showing people that I really could do something that I make a very good subject for the present inquiry. Many factors have contributed to the attitude, chief among them being the fact that as the youngest member of the family I have had to spend twenty-one years trying to convince them that my opinions are worth listening to, and, still more important, the fact that I have had the privilege of having since I was seven years old a friend, equal in age to me, but infinitely superior otherwise. Not being quite sure of myself in the beginning, her strong convictions soon convinced

me that her will was very strong and mine correspondingly weak. I am certain that it never occurred to her that she was making me feel so much like a worm in her presence, but I soon acquired the attitude that whatever my family did in a method different from the way pursued by her family was, of course, wrong. I remember once being at her house when she was opening some bundles of groceries, and having her offer me a piece of celery. She ate hers, and, waiting to see how she did it, I imitated her and ate mine. After a minute, with an extraordinary burst of courage, I said haltingly, "We eat salt on celery at our house", at which she laughed so long that it was uncomfortable. It was from such occasions that she decided that I had no sense of humor, a fact with which she made me so thoroughly acquainted that it was one of my chief worries for years. Then she got so much amusement from the fact that I had no ear for music and could not carry a tune, that I never dared to try to sing, but would dream by the hour that sometime a miracle would happen and that I would suddenly possess a remarkable voice with which I would sway great audiences, in the last row of which were always some of the people who had known me as an unaccomplished, unattractive child. For years I did nothing without first wondering what this other youngster would think, but I can almost remember the time when I decided that there was no reason on earth why everything that she and her family did was necessarily right. I began to use my own judgment and gradually her control over me disappeared.

There were other minor causes. My mother had been forced, since my father's death when I was five years old, to work, a condition which existed in the homes of none of my friends. And although I emphasized very much the fact that we always had a maid while most of their families did not, nevertheless, I fancied them saying that anyone would have to have a maid if her mother worked. And then, too, I was always a little ashamed of the fact that my mother was so old. I never could remember when her hair had not been very gray, and she had often been mistaken for my grandmother, a fact which bothered me only when I met the more youthful mothers of my friends.

By the time I got to high school, I had a fair amount of self-respect, but I must admit that I enjoyed my position of certain prominence largely because it made me feel that I really was somebody after all. The general trend of my day dreams, during the first years of high school at least, is so amusing that I can't resist telling them even if it is a sort of give-away. I pictured myself in turn as a great writer, a great singer, a brilliant public speaker, an artist of renown. . . . I couldn't draw a rail fence, but I expected another miracle here. My shyness in meeting people led me to dream of some day being a perfectly charming hostess, an interesting and very intellectual woman. And because my poor memory made it difficult for me to recall facts I wanted to use in conversations, largely in order to be a good conversationalist, I worried over it greatly.

In coming to college my motives were most inconsistent. I had had all my life a real interest in the things in books. In high school I enjoyed studying and yet because I was sometimes labelled a dig, I was firmly determined that that mark of inferiority should not pursue me to college. And during my Freshman year I deliberately sat around Haydn Hall fooling away my time. I cut classes to prove that I was the gloriously irresponsible kind of person who did that recklessly, and I doubt if anything ever brought so much pleasure to me as the fact that I came within one of flunking my first semester of French. Gradually and unconsciously, however, in college I have been doing the things that interest me. And now I regret my Freshman foolishness because it lost me my good habits of study which I now desire because I am always wanting the facts that concentrated study would have made mine. But even this does not worry me especially.

During my first two years in college and part of my third, I acquired an attitude which though I believe to have been founded on my interpretation of facts as I saw them, nevertheless savored of a desire to be intellectually superior to the mass of mere acceptors of what had been given them. I had reasoned out what I liked to call an agnosticism because that seemed scientific but what was purely atheistic mechanism. It absorbed more and more of my attention, forcing me at times into the depths of morbidness, and yet I would not admit anything which I considered less liberal. And when the other side of the question was forced on my attention, I resisted it as long as I possibly could, dreading the idea of leaving the position of intellectual superiority.

The last phase of the story occurred this fall and may be stretching the point of inferiority a bit, but it works so much the same that I can't help connecting them.

After I did swing to the other side and finally did admit a religious belief, I began to figure out, deductively I fear, a theology of my own. All through my growing period theology has fascinated me. Figuring out the logic of it, stretching my imagination to conceive the infinite has been one of my greatest pleasures and from it, of course, my adherence to the mechanistic theory grew. But when I began to see that my future interests were going to lie in the field of religious work, I began to take an inventory of my beliefs to see if they were adequate. And I decided that they were not sufficiently settled, that I lacked the necessary certainty. And then began a feverish attempt to make my ideas conform to those of people who had lived and experienced far more than I, an effort to feel about things as they felt, to be as sure of myself as they were in order that I might do what they had done. It got me nowhere, of course, but into the depths. Then in class one day it was remarked that conversion might be the getting rid of an obsession and it flashed across my mind that I didn't have to do what those other people had done, and that therefore my lack of certainty need not worry me. I decided that all I need do would be to fit in somewhere where the convictions I had would be adequate. And the interesting thing about it is that besides getting peace of mind I have begun to get more of the certainty at the same time. I was officially converted at the age of eleven, but I'm afraid it did nothing more than convince me of my inferiority without making me lose the desire to be superior. Who knows that this [the experience just mentioned] may not be the real thing, even if I didn't see visions or experience a great emotional effect? The relief from worry has been enough and so far, at least, I am still indifferent as to whether I am superior or not.

These simple confessions are, of course, very different from conclusions reached through an elaborate psychoanalysis.[1] Yet, whatever deeper attitudes the latter might reveal, I think that the confessions, as they stand, will warrant something like the following conclusions:

(1) An uncomfortable sense of inferiority is very common indeed with women; as it is also with men.

(2) Its victims attribute it to a great variety of causes, many of which may seem trivial enough to an unimaginative outsider.

(3) Even in the most distressing cases modern American college girls do not usually interpret their feelings in terms of Adler's universal contrast between the complete man and the incomplete woman. They care about all kinds of social relations; they want to be like other girls they admire; and their self-respect is not so steeped in thoughts of worthy masculinity that you can read it between the lines, as you can with St. Teresa. And so it follows:

(4) When a suspicion or accusation of inferiority leads to a protest it is by no means always a masculine protest. It is hardly fair to think of a protest against restrictions or indignities imposed on women and girls (in pre-flapper days) as a protest against womanhood or girlhood itself. But in the papers, even this is no more evident than the "grown-up protest" which the writers raised against indignities and restrictions imposed on them as children. Indeed, there are all kinds of protests, such as those of race, nationality, color, and class, that turn the world upside down.

[1] See note, p. 265.

(5) Inferiority is not anything absolute. It is usually a matter of social relations as estimated by varying social standards. But if one has to find common elements in all the situations that set a protest going, "being different", "despised", or "out of it" comes very much closer to covering all the ground than "lacking masculinity". If effeminacy brought fashionable clothing, desired companionship, and a halo of renown, no one would protest against that imputation. But a child resents contempt, discrimination and exclusion long before he has any conception whatever of manly prowess, in spite of the contrast which Adler supposes him to make between the admirable, all-powerful father and the long-suffering mother. The dominant thoughts and impulses of youthful human beings are more social than sexual, and their social ambitions are not all couched in terms of brute force.

(6) However much some organic insufficiency or other physical condition may prepare the way for a sense of inferiority, it is by no means always the sole cause of the discomfort which the victim feels. The worst of it all is loneliness or the sense of squirming before a real or imagined spectator; and however "pepless" one's body may be he can get relief when he learns, like the last of the writers quoted, (a) that the spectator whose disapproval he fears is not the only desirable companion or judge, and (b) that in any case it does not matter very much whether "I am superior or not".

(7) The best way to guard against a sense of inferiority with one's children is to give them the home atmosphere of jovial kindliness which Number Seven evidently enjoyed. The emotional habits of childhood last, and it takes serious reëducation for any one to carry a spirit of victory through life if his early years were clouded with a sense of being somehow insecure, at fault, and out of it.

Freud made a remarkable contribution to both medicine and psychology, in spite of "unconscious ideas" and stereotyped dream symbolism, when he showed that great misery could be caused by tensions which the patient did not understand or perhaps even realize that he carried (he would call them repressed thoughts and wishes) and when he developed a method of dealing with them. It was unfortunate that he should make, or seem to make, all such tensions alike due to repressed sexual desire.

Adler has done useful work in pointing out, as against Freud, that the repressed urge of sex is not everything—a fixed idea, "before which congenital differences vanish" (p. 443), may be far more deadly; and his picture of a soul bent on self-vindication is, in the main, vividly and horribly realistic and true. But nothing

is gained by making all self-vindication sex-vindication or by substituting one narrow view for another and thus leaving the impression that some writer's own particular specialty in tensions is the only kind there is, that every neurosis and even every dream (p. 400) is a protest against some imputation, whether of deficient masculinity or anything else—that the protestant is the only neurotic.

A neurotic is one who does not carry tensions easily. He seems to be constantly mentally exhausted, or, as Janet puts it, more or less asleep, and he has to make more effort than other people to keep awake to all aspects of a situation, to hold a multitude of things in mind at once and bring his various undertakings to success; and so he breaks down under strains that others might endure. But there is no reason under Heaven why all the strains must be alike. To be kept from sleep, to endure the strains of war or even the ceaseless irritation of impacted teeth or of nagging superiors, to be lost in a wilderness or caged and tortured, to be always keeping one's husband at peace with the children, or warding off a business collapse that may ruin hundreds—such strains end in a neurosis if they last long enough and if the individual is exhausted, "weak", "unstable", or "neurotic" enough to begin with.

To the average psychologist these do not all look like cases of either sex desire or self-vindication or any other single urge or purpose; and for therapeutic purposes it is not necessary to show that they are. What IS necessary is to remove as many physical and environmental irritants as possible; to build up exhausted nerve centers; to break up the glandular, vasomotor and other physiological habits or conditioned reflexes that develop under long-continued strain; and to remove the habit of strain itself by helping the individual to get away from childish denial and concealment, to find and bravely face his worries, and then to get a new perspective from the standpoint of a reasonable adult counseller or, as Spinoza would have put it, *sub specie aeternitatis.*

RACIAL DIFFERENCES IN SPEED AND ACCURACY

By OTTO KLINEBERG
COLUMBIA UNIVERSITY

THE application of intelligence tests to the study of racial differences has usually been subject to the criticism that educational, and particularly linguistic, factors were principally responsible for the results. While the attempt has frequently been made to equate groups for these factors, for example by taking American Indian or Negro children from the same school grades as the white children with whom they were being compared, it has been quite impossible to equate for the more subtle educational influences of the home, the group, and the social and cultural behavior patterns. More specifically, it seems hardly reasonable to suppose that American Indian children whose parents speak little or no English, who do little or no reading in the home, who receive comparatively little social stimulation for acquiring the learning of the white man, have had the same "education" as their white classmates. In the present investigation it seemed advisable, therefore, to make use of performance material only, in the attempt to see whether the apparent inferiority of the American Indian, as demonstrated by the linguistic tests, held also for tests in which scholastic and educational factors were reduced to a minimum.

The investigation was conducted during July and August, 1926. The subjects were 120 full-blood or almost full-blood children on the Yakima Indian reservation, Washington, and 110 white children living in the town of Toppenish, in the heart of the reservation, and known as the Reservation City. The ages of both groups ranged from 7 to 16 years. The Indian homes were scattered over an area of about 25 miles radius, with Toppenish as its center. The children were selected absolutely at random; every house on the reservation in which there were any children was visited; and practically every child who was not away in the mountains for the annual berry-picking was tested. The white children were also chosen at random by visiting from house to house in Toppenish, although a few of them were waylaid as they left the local swimming-pool, and persuaded, often with the help of a small bribe, to postpone their departure until they had sub-

mitted to the tests. For the most part they went to the same schools as the Indian children; they were the sons and daughters of merchants, artisans, professional men, etc., and probably represented a very fair cross-section of the whole population.

The tests used were five tests in the Pintner-Patterson series,—the Mare and Foal test, the Casuist Form Board, the Healy A test, the Triangle test, and the Knox Cube test. A record was kept of the time and the number of errors, except in the case of the Knox test, in which the record naturally includes only the number of correct responses. In the Healy A test, the number of moves, rather than errors, was recorded.

It became apparent, as the investigation progressed, that there *was* a difference in the behavior of the two groups, but a difference which could not be expressed in terms of the superiority of one group over the other. It was a qualitative rather than a quantitative difference,—a qualitative difference which could, however, be expressed in quantitative terms. To put it in a word, the white children were quicker, but the Indian children made fewer errors.

In extreme cases, the difference is very striking. Here are two boys, one white, one Indian; both are ten years old. The Casuist Form Board is set before them; they are asked to put the pieces in their right places as quickly as possible. The white boy jumps at the puzzle; he tries the piece here, there, everywhere; when he strikes what seems to be its proper place he leaves it there, and flies to the next. He completes the test in 66 seconds, but he has made 14 errors in the process. The Indian boy moves slowly, deliberately; he seems to think each move twice over. You have said to him also "as quickly as possible", but that evidently means little to him. He sees no need for hurry. He takes 137 seconds to complete the tests. A poor performance, apparently, but he has not made a single false move. One Indian boy of 13 solved the Casuist Form Board in 170 seconds without a single error, and many others approached this general type of performance.

Looking at the results of the whole group we find that in the Healy A test, for example, the *time* record shows lower medians for the whites at eight ages out of ten, and the record for *moves* shows lower medians for the Indians at 9 ages. The results are substantially similar, though not always quite as well-marked, for the other tests.

An index of the amount of difference can be obtained by a comparison of the two groups as a whole, disregarding ages. Such a comparison seems legitimate, as the median age for both Indian and white groups is 11, and the Standard Deviations are

practically identical (2.51 and 2.54 respectively). Compared in this way, the median records obtained by the two groups are as follows:

For the Casuist Form Board—

Indians	79 seconds	3 errors
Whites	71 seconds	5 errors

The Mare and Foal test—

Indians	33 seconds	1 error
Whites	29 seconds	2 errors

The Healy A test—

Indians	95 seconds	17 moves
Whites	85 seconds	25 moves

The Triangle test—

Indians	68 seconds	10 errors
Whites	48 seconds	12 errors

The Knox Cube test—Indians, 7; Whites, 7.

Reliability formulae were not applicable to these differences, owing to the rather steep descent of the curves with age, and the consequent large Probable Errors. The consistency of the results for all four tests, however, is a fairly satisfactory index of their reliability.

Some indication of the actual speed of movement of the two groups can be obtained by dividing the total number of seconds used by the whole group in completing the Healy A test by the total number of moves made. This shows that on the average the Indians made one move in 5.44 seconds, or about 11 moves a minute; while the whites made a move in 3.53 seconds, or 17 moves a minute.

Obviously no generalization can be made for all American Indians on the basis of the results obtained on 120 Indian children on one Indian reservation, but it is rather interesting to note that these results, as far as speed is concerned, are in complete agreement with the statements of anthropologists and other observers who have had considerable contact with the Indian. I was told by the Government Agent on the reservation, by the superintendent of schools, and by several Indians themselves, that the results are quite what they would have expected. The emphasis on speed, which seems to be one of the salient characteristics of modern American life, has apparently not penetrated the cultural pattern of the Indian, at least on the Yakima reservation, although it is true that in most things save color, he is rapidly becoming a white man.

Those who look for economic interpretations of social and psychological data will have little trouble in this case. Speed seems to have a place in a competitive society, but there is no economic competition among the Yakimas. Not more than 15 per cent or 20 per cent of the able-bodied men earn their living, by farming and herding. The others live on the rent which white people pay for the use of their land. Fishing and berry-picking supply them with the greater part of the food which they require. For the rest they do as they will—but slowly. They have no need for speed.

The possibility remains that the slowness of the Indian is due to racial, perhaps to metabolic, factors. One way of investigating this possibility would be to test Indians who had a social environment very similar to that of the whites, and see whether the more hectic life of large American cities tends to speed up their activities. Unfortunately, such an American Indian group is not available. In the case of the American Negro, the comparison of a northern (for example a New York) group and a southern group with each other as well as with northern and southern whites may throw some light on the racial and environmental determinants of speed. Such an investigation, or rather part of it, is now in progress.

In the case of the American Indian, it seems reasonable to assume that if the deficiency in the speed factor is racial, it should be less marked as the amount of Indian blood decreases. The mixed-bloods on the reservation are for the most part socially and culturally Indian. If the speed factor is social, the mixed-bloods should resemble the Indians; if it is racial, they should tend to resemble the whites in the proportion of white intermixture. By the method of percentile position, using Clark Hull's formula and table for transmuting position into score, a comparison was made of mixed-bloods ranging from $\frac{7}{8}$ Indian to $\frac{3}{4}$ white. The results show no regularity, but tend on the whole to cluster about the medians for the Indians. The cases are probably too few, however, to warrant any positive conclusion.

It might be asked whether there is an emphasis on accuracy on the part of the American Indian which is responsible for the smaller number of errors. I am inclined to believe that the greater accuracy results from the relative lack of speed, and that no additional hypothesis is required. The slower movement, the greater deliberation, seem to me to account for the greater accuracy. If this suggestion is valid, it should be possible to

decrease the number of errors made by white children, by forcing them to make their moves more slowly. Such an investigation is also in progress.

It seems permissible, on the basis of these results, to make the following suggestions:

1. That the use of speed as a test of excellence of performance, with difficulty kept constant, may be entirely unfair to some groups in which the speed factor does not have the significance which we habitually ascribe to it.

2. That the relatively better showing by the Indians on performance tests suggests that some at least, if not all, of the poor records obtained by other investigators may be due to language difficulties and educational differences.

3. That the expression of quantitative differences between groups in terms of Mental Age, Intelligence Quotient, or points on a Point Scale, may hide interesting qualitative differences which deserve attention. If the medians of our two groups were so expressed there would be very little difference, if any, between the two groups. It seems advisable always to subject such quantitative statements to further analysis with a view to determining whether there are any qualitative differences which enter into the result.

THE USE OF GROUP RIVALRY AS AN INCENTIVE

By ELIZABETH B. HURLOCK
COLUMBIA UNIVERSITY

RIVALRY, either group or individual, has proved to be an effective incentive to increased efficiency in the fields of industry and sport. Its value for purely mental work is somewhat doubtful, as it is generally believed to increase the quantity of the work, while at the same time decreasing the quality. Because of the lack of experimental data on the subject, the writer has attempted, in the experiment reported on the following pages, to study the value of group rivalry as an incentive to increased efficiency in school work, not only from the point of view of the effect upon the quantity and quality of the work, but in its relation to age, sex and individual differences.

Before giving a detailed description of the present study, an attempt will be made to summarize briefly studies made previous to this, but which deal with the same general problem. Allport,[1] in his "Social Psychology", has summarized the studies of this sort made up to the publication of his book in 1924, and this summary will be quoted here. "We may refer again to the experiment of Triplett upon rivalry in the turning of fishing reels. Forty subjects were used in this investigation. Twenty of them gained markedly in the competitive trials over their average for solitary work. Ten were little affected by the competition. These were for the most part older children. And ten actually lost in speed under the influence of rivalry. These last showed evidences of emotional excitement and a loss of motor control. Young, nervous and excitable subjects are prone to overstimulation through rivalry, with a consequent lowering of efficiency in competitive performance. Triplett found a higher percentage of girls than of boys susceptible to increase of performance through competition.

"The effect of rivalry, like that of social facilitation, varies inversely with the ability of the worker. In 1914 Dr. W. Moede published an account of rivalry in speed of tapping and strength of hand grip. Seventeen boys between twelve and fourteen years

[1] Allport, Floyd H. "Social Psychology," pp. 280–282.

of age participated. The more rapid tappers made actually lower scores when tapping in competition with the others than when working alone. The speed of the nine slowest individuals, on the other hand, showed a distinct social increment. This increment was somewhat larger than the decrement of the more rapid half. * * * The slower workers' reactions are facilitated because they are stimulated by movements made at a faster rate than their own. The more rapid workers lack such incitement. Rivalry also cooperates in this leveling tendency. The more rapid workers, realizing the ease with which they excel, lose interest in the competition and slacken their efforts; whereas the slower subjects, provided they are not hopelessly outclassed, are aroused to greater effort through their zeal to rival the others. * * * Moede's researches included strength tests not only in dual contests, but between competing teams of five boys each. The records of the individuals in the group contests exceeded those in the dual contest, just as the latter excelled the records for the solitary tests."

The only other experiment on this subject was reported by Irving C. Whittemore in the JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, volume 19, 1924–1925, pp. 236–254, on "The Influence of Competition on Performance: An Experimental Study." The purpose of this experiment, to quote Dr. Whittemore, was "to discover by experimental means, the influence of rivalry on the performance of a simple task, resembling a factory operation and involving both mental and motor capacities." As subjects, he used twelve college students, 4 Radcliffe women and 8 Harvard men. The average age of this group was twenty-four years. The subjects were divided into three groups, two containing one woman and three men, and the third, two women and two men. The task he set for them was the printing of paragraphs from the daily press with individual rubber types. Four tests of five minutes each were given in one laboratory period. The instructions given were as follows. Non-Competition: "Try to get as much work done as you can, remembering that both the quality and quantity of the work you do will count in your final score. Don't attempt to beat your fellows." Competition: "Try to beat your fellow workers—remembering that both quality and quantity count in your final score. You may use any method you see fit to employ in keeping track of the progress of your competitors. Compete!" Each group was given both sets of instructions, and was tested under the conditions of competition and non-competition. Practice effects were eliminated by varying the work periods.

In order to test the influence of group competition, Whittemore,

in certain tests of the series, stimulated the groups to rival each other by telling each group the standing group score of the other two groups. The groups never worked together, but each group recognized that it was competing against another group, not present.

A summary of some of the most important findings may be given. "1. All subjects turned out more work when competing than when not competing. The average percentile gain was 26.

2. Subjects least capable in speed profit most from competition.

3. All subjects did poorer work when competing than when not competing.

4. On a semi-mechanical task, competition tends to emphasize speed rather than quality, even when the subjects know that they are both important in the total score.

5. Most subjects seem to work slightly faster when coöperating with groups which, in turn are in competition with other groups not present but recognized, than when competing against one another.

6. No marked tendency for subjects to do work of lesser quality when competing in small group units than when competing with one another. Some seem to do better, some slightly worse. The tendencies are about equally divided."

All of the studies reported above, as it may be seen, are made on a few subjects—the maximum number being 40—and the task set is of a mechanical or semi-mechanical sort.

The subjects used in the present experiment were 155 children from grades IV and VI of the Cameron Public School of Harrisburg, Penna. There were 73 boys and 82 girls. Table I shows

TABLE I. Distribution of Children

Groups	Grade VI			Grade IV			Totals
	Boys	Girls	Combined	Boys	Girls	Combined	
Control	17	23	40	19	18	37	77
Rivalry	18	23	41	19	18	37	78
Totals	35	46	81	38	36	74	155

the distribution of the children in the two experimental groups, within the two school grades. An equal number of boys and girls are placed in each group. The average ages of the children are given in Table II. A study of this table shows that the average

TABLE II. CHRONOLOGICAL AGES OF THE CHILDREN

	Averages			σ			P.E.$_{av.}$		
	Boys	Girls	Combined	Boys	Girls	Combined	Boys	Girls	Combined
Grade VI	12.44	11.60	12.03	1.29	1.15	1.21	.14	.13	.09
Grade IV	8.89	9.15	9.03	.74	1.04	.87	.08	.11	.07

age of the Grade VI children is 12.03, and of the Grade IV children, 9.03 years. In Grade VI, the boys are on the average slightly older than the girls, while in the younger grade, the reverse is the case.

The tests given to these children were modifications made by the writer of the Courtis Research Tests in Arithmetic, Addition form. Each test contained 30 problems of 6 three-place numbers, all of equal difficuty. The type of material, as can readily be seen, required speed and accuracy on the part of the child, rather than reasoning of the problem solving variety. There were five forms of the test, and a different form was used on each day of the experiment. The first twenty minutes of the class period was given over to a discussion of the results of the previous tests, and to an attempt on the part of the writer to stimulate rivalry to the maximum. The remaining ten minutes of the class period was then given over to the test proper.

The procedure was carefully planned so as to arouse to the maximum the spirit of competition in the children, while at the same time, keeping it under controlled conditions. This was done, as was evidenced by the excitement prevalent among the children during the week of the experiment.

It would not be possible, within the limits of this paper, to give a detailed description of the procedure used. It must therefore suffice to note the important features. On the first day, all of the children were tested together, with no preliminary explanation other than that they were to take an arithmetic test, and that each child was urged to do his or her best. On the basis of these results, the children in each grade were divided into two equal groups—the Control and Rivalry groups. These groups were equated on the basis of age, initial ability in the arithmetic test, and number of boys and girls within each group. After the first day, the Control group was given the tests in a separate room. No comment was made to them, other than that they were asked to add the examples as quickly and as accurately as possible. The Rivalry group, at the beginning of the second day, was then divided into two sub-groups, of equal age, ability and sex distribution. The writer explained emphatically to these

TABLE III. AVERAGE SCORES—TOTAL RESULTS

Groups	Averages					σ					P.E.$_{av.}$				
	First Day	Second Day	Third Day	Fourth Day	Fifth Day	First Day	Second Day	Third Day	Fourth Day	Fifth Day	First Day	Second Day	Third Day	Fourth Day	Fifth Day
Control	7.43	8.12	8.19	7.99	8.06	5.39	4.95	4.97	5.03	5.21	.41	.38	.38	.39	.40
Rivalry	7.24	11.00	11.26	11.17	11.39	5.06	6.34	6.08	5.77	6.14	.39	.48	.46	.45	.47

RELIABILITY OF DIFFERENCES

Reproved—control groups	Actual difference	P.E.$_{diff.}$	Difference in P.E. units	Chances that true difference is above 0
1st test	—.19	.57	.33	5,880 in 10,000
3rd test	3.07	.59	5.20	9,998 in 10,000
5th test	3.33	.61	5.46	9,999 in 10,000

TABLE V. AVERAGE SCORES—SEX COMPARISONS

Groups	Averages					σ					P.E.$_{av.}$				
	First Day	Second Day	Third Day	Fourth Day	Fifth Day	First Day	Second Day	Third Day	Fourth Day	Fifth Day	First Day	Second Day	Third Day	Fourth Day	Fifth Day
Control:															
Boys	7.61	8.02	8.17	7.99	7.99	5.38	4.47	4.21	4.42	4.44	.60	.50	.47	.49	.49
Girls	7.27	8.19	8.22	8.00	8.14	5.26	5.50	5.56	5.50	5.53	.55	.58	.59	.58	.58
Rivalry:															
Boys	7.29	10.73	10.79	10.57	11.09	5.53	6.22	6.24	5.73	5.94	.61	.68	.68	.63	.66
Girls	7.19	11.24	11.69	11.71	11.92	5.37	6.25	6.05	5.33	6.15	.57	.69	.67	.58	.68

groups that they were equal in ability, and that each had an equal chance of winning. On the second and following days of competition, the writer read out the names of the members of the winning group—asking each child to rise as his or her name was called. In addition to this, the score for each group (consisting of the number of examples added correctly by the members of the group) was written on the blackboard. The writer

TABLE IV. PERCENTAGE OF AVERAGE INCREASE WITHIN EACH GROUP—TOTAL RESULTS

Groups	Third test over first, per cent	Third test over control, per cent	Fifth test over first, per cent	Fifth test over control, per cent
Control	10	—	8	—
Rivalry	55	37	57	41

explained just how much gain one group had made over the other, and urged the group that was lagging behind to work harder in the test that was to follow.

The attitude of the children, as evidenced by their enthusiasm in taking the tests—the applause of the winning group, and the talk among the children in the halls and class-rooms, both before and after the test was made—indicates that the writer was able, as nearly as possible, to create as intense enthusiasm as is found in any competitive sport. Therefore, any gain made by the Rivalry group, over and above the gain due to practice, which can

TABLE VI. PERCENTAGE OF AVERAGE INCREASE WITHIN EACH GROUP—SEX COMPARISONS

Groups	Third test over first, per cent	Third test over control, per cent	Fifth test over first, per cent	Fifth test over control, per cent
Control:				
Boys	7	—	5	—
Girls	13	—	12	—
Rivalry:				
Boys	48	32	52	39
Girls	62	42	65	48

be measured by the work of the Control group, can be rightfully assumed to be due to the influence of the incentive of group rivalry.

Tables III and IV give the total results of this experiment for the Control and Rivalry groups, when no account is taken of the differences in ages, sex, or initial ability. From Table III, it may be seen that the average score made by the Rivalry group exceeds that of the Control group on every day except that of the initial performance. On the fifth, or last day of the experiment, the average gain made by the Control group was only .63, as opposed to the average gain made by the Rivalry group, 3.93. The statis-

tical reliability of the differences was then computed for the tests taken on the first, third and fifth days of the experiment. In the first test, the difference in average scores between the Rivalry and Control groups was so small that it was little more than a chance difference. In the third and fifth tests, on the other hand, the differences were great enough to say with absolute certainty that the differences found were true differences. When a study of the percentage of average improvement within each group was made, it was found that on both the third and fifth days of the experiment, a gain of over 50 per cent was made, over the first test. (See Table IV.) When the increase due to practice, as measured by the Control group, was accounted for, it was found that a substantial gain of 37 per cent and 41 per cent for the third and fifth days, respectively, still remained.

The children within each group were then divided into subgroups, according to sex differences, and a comparison made. Experimental studies, based on the results of Intelligence, Educational and Psychological tests agree that the so-called sex differences in these traits are far less than they were popularly believed to be. In order to evaluate group rivalry as a practical incentive for school work, it is essential to know if it is applicable to children of both sexes, or if one is more strongly influenced by it than the other. Triplett, whose researches have already been quoted, found that in the case of individual rivalry, the girls on the whole seemed to be more susceptible to this form of incentive. Whittemore, who studied the influence of both individual and group rivalry, used men and women subjects, but, unfortunately, has not made a sex comparison. In the present study, a comparison was made, and the results given in Table V. From this table, it may be seen that sex differences are even less than have been reported in many previous studies of sex comparisons. In the Control group, the girls showed a slight tendency to gain more from practice than did the boys, but the difference, .49 on the average, is so slight as to be of little value. In the Rivalry group, the boys gained, on the average, 3.80 and the girls, 4.73, from the first to the last tests. When the effect of practice was taken into consideration, it was found that the boys gained, on the average, 2.62 and 3.10, for the third and fifth days, respectively, and the girls, 3.47 and 3.78. Table VI, showing the percentage of gains, indicates that on the third day of the experiment, the boys scored 32 per cent above the Control group, and the girls, 42 per cent; on the fifth day, the boys had a gain of 39 per cent and the girls, 46 per cent. These results, expressed in terms of average gain, and per cent of gain, show

TABLE VII. AVERAGE SCORES—GRADE COMPARISONS

Groups	Averages					σ					P.E.$_{av.}$				
	First Day	Second Day	Third Day	Fourth Day	Fifth Day	First Day	Second Day	Third Day	Fourth Day	Fifth Day	First Day	Second Day	Third Day	Fourth Day	Fifth Day
Control:															
Grade VI	11.24	11.62	11.75	11.51	11.54	5.09	4.94	4.65	4.81	5.24	.56	.55	.51	.53	.58
Grade IV	3.90	4.87	4.88	4.72	4.85	2.20	1.91	2.04	1.98	2.09	.23	.19	.21	.20	.22
Rivalry:															
Grade VI	11.19	15.43	15.27	14.70	14.87	5.09	6.14	5.59	5.61	6.34	.56	.68	.62	.62	.70
Grade IV	3.69	7.00	7.63	7.99	8.24	2.69	3.45	4.03	3.65	3.89	.29	.37	.43	.39	.41

TABLE IX. AVERAGE SCORES—COMPARISON OF DIFFERENT GRADES OF ABILITY

Groups	Averages					σ					P.E.$_{av.}$				
	First Day	Second Day	Third Day	Fourth Day	Fifth Day	First Day	Second Day	Third Day	Fourth Day	Fifth Day	First Day	Second Day	Third Day	Fourth Day	Fifth Day
Control:															
Superior	11.19	11.42	11.15	10.92	11.38	5.92	6.01	5.57	5.72	6.03	.78	.79	.73	.75	.79
Average	7.23	7.69	7.95	8.04	7.73	3.78	3.59	4.21	4.26	4.24	.50	.45	.55	.56	.56
Inferior	3.58	4.92	5.15	4.81	4.77	2.65	2.26	2.52	2.23	2.16	.35	.30	.33	.29	.28
Rivalry:															
Superior	11.00	14.62	15.42	15.31	15.58	5.88	7.21	6.08	6.08	6.69	.77	.97	.80	.80	.88
Average	7.19	10.85	10.73	10.31	10.42	3.95	5.46	4.94	4.49	4.83	.52	.72	.65	.60	.64
Inferior	3.54	7.54	7.61	7.89	7.69	2.84	4.29	4.64	4.05	5.14	.37	.56	.61	.53	.68

that there is a slight difference between the sexes, and that what gain there is to be found is in favor of the girls. This finding corroborates the statement given by Triplett, as based upon his studies.

Because there was so wide a range of ages represented in each grade, and because the number of subjects was too limited to permit a division into age groups, it was thought advisable to study age differences by comparing the older with the younger grade, and allowing the average age of each grade to represent the age level of the group. From Table II it may be seen that the average age for the sixth grade children is 12.03 years, and for the fourth grade, 9.03. Tables VII and VIII give the results for these comparisons. A study of these tables reveals some interesting points. In the Control group, practically no gain was made by the older children from the first to the fifth day of the test,—the greatest gain, .51 on the average, was made on the third day. The younger children showed a slightly greater tendency to improve from practice. The maximum gain made by them, however, was only .98, made on the third day of the experiment. The use of rivalry with children of both grades brought about an increase in

TABLE VIII. PERCENTAGE OF AVERAGE INCREASE WITHIN EACH GROUP—GRADE COMPARISONS

Groups	Third test over first, per cent	Third test over control, per cent	Fifth test over first, per cent	Fifth test over control, per cent
Control:				
Grade VI	4	—	2	—
Grade IV	25	—	24	—
Rivalry:				
Grade VI	36	30	33	29
Grade IV	107	56	123	70

work. The older children made their greatest advance on the second day of the experiment, 4.24, and following this, there was a slight decrease in average score, to 3.68 gain on the final day. The younger children, on the other hand, showed a gradual improvement from day to day. The gain they made on the third day was 3.94, and on the fifth, 4.55. Table VIII shows the per cent of average increase within the group, and over and above practice effect, as measured by the Control group. It emphasizes the slight tendency on the part of the older children in the Control group to improve their scores with practice, and the greater tendency on the part of the younger children to make improvements. It also reveals that young children respond more to rivalry as an incentive than do the older ones, and that this is increasingly effective throughout the period of the experiment.

Triplett found that most of the gains made were made by the older children of his group of 40. "Young, nervous and excitable subjects", he said "were prone to overstimulation through rivalry, with a consequent lowering of efficiency in competitive performance." These findings are contrary to the ones of the present experiment, but perhaps can be accounted for by the difference in the number of subjects, the type of material used, and the length of the experiment.

The next question submitted to investigation was whether rivalry varied in its value as an incentive according to the ability of the children in the subject tested. In other words, do superior children respond to this incentive more than do average or inferior children? In order to study this question, all of the children in the two experimental groups were divided into three sub-groups, equal in numbers. The third who stood highest in the initial test were rated as "Superior", the middle third, "Average", and the lowest third, "Inferior". Tables IX and X present the results obtained from this classification. From Table IX, which contains the average scores, it may be seen that the superior children of the Control group do almost constant work from the beginning to the end of the experiment. The average and inferior children, on the other hand, showed a slight gain due to the effect of practice and experience. When the results of the Rivalry group were studied, the average scores for each of the three sub-groups showed an increase, the greatest amount being made by the inferior, followed by the superior and the average groups. In Table X, which shows the

TABLE X. PERCENTAGE OF AVERAGE INCREASE WITHIN EACH GROUP—COMPARISON OF DIFFERENT LEVELS OF ABILITY

Groups	Third test over first, per cent	Third test over control, per cent	Fifth test over first, per cent	Fifth test over control, per cent
Control:				
Superior	—.3	—	2	—
Average	10	—	7	—
Inferior	43	—	33	—
Rivalry:				
Superior	40	38	41	37
Average	49	35	45	35
Inferior	115	48	117	59

per cent of increase, we find that inferior children did 48 and 59 per cent better work on the third and fifth days respectively, than did the Control group children of equal ability. The superior children gained 38 and 37 per cent on these two days, and the average, 35 per cent on both days.

In order to test out the assumption that rivalry increases work, but decreases accuracy, the writer made a study of the average number of problems added by each group every day, and the average number correct. These results are shown in Table XI. In order to bring out the differences more forcibly, the per cent of problems correct for each day is also given. These results impress us with the fact that rivalry increases accuracy on the part of the children, while absence of incentive tends to decrease it. The greatest gain, 8 per cent, was made by the Rivalry group on the third day, and the greatest loss, 8 per cent, by the Control group on the fifth day of the experiment. As these gains and losses are so small, it might be inferred that rivalry has less effect on accuracy than is usually believed.

Allport, in his discussion of this matter, says that "rivalry, like social facilitation, increases the quantity, but does not improve

TABLE XI. PERCENTAGE OF AVERAGE ACCURACY SHOWN THROUGHOUT THE SERIES

	First day			Second day			Third day		
Groups	Solved	Correct	Per cent correct	Solved	Correct	Per cent correct	Solved	Correct	Per cent correct
Control	10.63	7.43	70	13.89	8.12	59	12.94	8.19	63
Rivalry	10.73	7.24	67	14.64	11.00	75	15.05	11.26	75

	Fourth day			Fifth day			Gain in accuracy	
Groups	Solved	Correct	Per cent correct	Solved	Correct	Per cent correct	Third day over first, per cent	Fifth day over first, per cent
Control	13.35	7.99	59	13.01	8.06	62	—7	—8
Rivalry	14.78	11.17	75	15.60	11.39	73	8	6

the quality of the work. There is likely, in fact, to be a deterioration in quality. The effect of competition is more favorable for speed of movement than for precision or constancy of attention. The laws of rivalry must be studied in relation to the individual. While competition is productive of speed in most persons, it overexcites and retards the work of some." Whittemore in the summary of his experiment, reports that "all subjects turned out more work when competing than when not competing. The average percentile gain was 26. All of his twelve subjects did poorer work when competing than when not competing. On a semi-mechanical task, competition tends to emphasize speed rather than quality, even when the subjects knew that both were important in the total score." The slight disagreement between these results and the work of previous writers may again be explained by the difference

in the number of the subjects used, and the difference in the nature of the task.

The last problem to be investigated was the effect of rivalry on the winning group. More specifically the problem can be stated thus—Will the group of children who stand ahead tend to do better work under the influence of rivalry, or will this incentive tend to spur on the losing group? At this point, the writer would like to add that when the experiment began, the children were told that the two groups were absolutely equal, and that one had as much chance to win as the other. This fact was emphasized every day,

TABLE XII. EFFECT OF RIVALRY ON THE WINNING GROUPS—TOTAL SCORE FOR EACH GROUP

Groups	First day	Second day	Third day	Fourth day	Fifth day
Rivalry A.	281	409	430	416	423
Rivalry B.	284	449	460	455	478

to dispel any notion on the part of the children that the winning group might have some better students in it than had the losing group. Table XII shows the results when the Rivalry group was divided into two equal sections, "A" and "B", to compete against each other during the experiment. Group B took the lead on the second day of the experiment and maintained this lead throughout. Even though this lead was slight, and in spite of the fact that Group A was urged especially to work harder, so as to come up to Group B, the psychological effect of defeat seems to have kept Group A from being able to overcome the initial lead. There is a tendency for this same thing to occur in the realm of sports, but it seems to decrease with age. Had older children been included in the group of subjects, perhaps defeat would have had the opposite effect upon the ones who stood behind.

SUMMARY

The conclusions based upon the data given in the preceding pages may be summarized as follows:

1. The average score made by the Rivalry group exceeded that made by the Control group on every day of the experiment, after the introduction of the incentive. The gain at the end of the experiment was 41 per cent, over and above practice effect, as measured by the Control group.

2. When a comparison was made between the boys and girls, it was found that only a very slight difference occurred, and this was in favor of the girls. The per cent of average gain for the

girls on the last day of the experiment was 46, and for the boys, 39.

3. Grade comparisons showed that the younger children responded more to the influence of rivalry than did the older ones, and that this incentive was increasingly effective throughout the period of the experiment.

4. Rivalry proved to be a more effective incentive for children of inferior ability than for children rated as average or superior. The inferior children showed an average gain of 59 per cent above practice effect, on the last day, while the superior and average children followed far behind with gains of 37 and 35 per cent respectively.

5. Increase in accuracy of performance came only with the application of the incentive. This increase, however, was small—the maximum being 8 per cent—but was an improvement over the Control group, which showed a decrease in accuracy throughout the experiment.

6. The members of the section of the Rivalry group who were defeated on the first day when the incentive was used, seemed never to be able to overcome this initial defeat, and as a consequence stood below the other section throughout the entire time.

These results, taken as a whole, to include the sex, age and ability factors, point to the conclusion that rivalry is an effective incentive to use with children of the elementary school grades, as a means of inducing them to do better work in connection with their school studies. The interest which this arouses, the outlet for a natural desire to compete with others of equal ages, and the training which it gives in the building up of a coöperative spirit, as opposed to selfish individualism, justify its use. Even if it should lead to a tendency to decrease in accuracy of work, in the desire to accomplish more for the group, this fault is more than compensated for by the increased interest in school work, and the opportunity offered for development of character and personality.

NOTES ON THE MENTAL DEVELOPMENT OF CHILDREN EXHIBITING THE SOMATIC SIGNS OF PUBERTY PRAECOX[1]

By LOIS DOE-KULMANN and CALVIN P. STONE
STANFORD UNIVERSITY

FOR the most part physicians examining cases of puberty praecox have stressed the somatic phases of this disorder and only incidentally touched upon its psychological aspects. Accordingly, our knowledge of the mental development associated with the somatic signs of puberty praecox is still in an equivocal state despite the fact that this very striking disorder has received its due share of attention throughout the history of clinical medicine.

Our own psychological interest in the subject led us to make an extensive survey of original case records for the purpose of assembling all data on mental development embodied therein. We anticipated that casual remarks on school achievement, intellectual performances at specific ages, etc., would be found in certain case histories and that from these rough estimates of the intellectual levels of individuals might be made even though specific opinions on mentality were not rendered by the medical examiners. This survey yielded a total of 190 cases presenting definite signs of puberty praecox. Of these only 62 contain any reference whatever to the mental development, school achievement, or intellectual performances of the subjects described.

ILLUSTRATIVE CASES

Owing to the incompleteness of many case studies and the bizarre nature of the symptoms themselves it is extremely difficult to select reports which may be regarded as accurately typifying the phenomena of puberty praecox. Disregarding this difficulty, however, we are giving below four cases which, in our opinion, illustrate the outstanding characteristics of the disorder and indicate the variety of data found in the more complete clinical reports.

Case 1. (Hutchison and Wauhope, 1924.) Female of English

[1] A portion of the transportation charges incurred in borrowing journals not in the Stanford libraries was borne by a grant from The National Research Council through The Committee for Research on Sex Problems.

parentage. Chronological age at time of examination, 3½ years. Examining physicians attribute puberty praecox to hypersecretion of the ovaries. No histological data on condition of ovaries because an operation was not permitted by parents. Birth was said to have been without complications. First child. Both parents in good health. No reference made to other similar cases appearing among the near relatives. Birth weight, 7 lbs. General bodily development appeared to be quite normal up to the end of the tenth or eleventh month, when a white vaginal discharge was noticed. This recurred on several occasions until the patient was 17 months old when she began to menstruate. Pubic hair in the usual female distribution began to appear at the onset of the first menstrual period. At the time of examination (3½ years) no axillary hair had appeared. Breasts were well formed.

Physical development: standing height, 44 inches. (Range of height for American children of 3½ years is between 34 and 42 inches; average, approximately 39 inches.) Weight, 52 pounds. (Average weight for American children of this height is approximately 42 lbs. Average weight for children of 3½ years, whose height is also average, is approximately 34 lbs.) Radiogram of parts of the skeleton show precocious ossification. The carpal bones, including the pisiform which normally becomes ossified around the age of 12 years, were completely ossified. The ossification of the patella, lesser trochanter of the femur, and external epicondyle of the humerus had reached a stage normal for children of 13 or 14 years. Dentition was precocious. Before the end of the tenth month eight teeth appeared. [Average number appearing before the eleventh month is about 4 (*Noyes,* 1912).]

Mental Development: The child was bright, but exceedingly obstinate. (Evidence for brightness not stated by the author; only reference to mentality.)

This report contains a photograph of the patient showing its precocious bodily development. Also a radiogram of the patient's wrist is contrasted with a similar radiogram from a normal child of 3½ years.

Case 2. (Tierney, 1922. Case 1.) Boy of American parentage. Chronological age when examined, 4 years 4 months. Weight at birth 12½ lbs. His subsequent development was rapid after the first year, as is indicated by the following figures. Weight at end of first year, 21 lbs.; second year, 42 lbs.; third year, 52 lbs.; at the time of examination, 4 1/3 years, 81 lbs. (Childhood diseases or other pertinent data on early development not given.)

Physical Development: Height at the age of 4 1/3 years:

symphysis to vertex, 26½ inches; symphysis to soles of feet 23½ inches. (Normal standing height for a boy of this age ranges between 35 and 43 inches, with an average falling at approximately 39 inches. *This boy's height closely approximates the average height of* 10 *year old American boys.*)

Weight is 81 lbs. (Average weight for a boy whose height is 53 inches is approximately 68 lbs. For a boy 4 1/3 years of age who is also of average height the weight is approximately 35 lbs. *With respect to weight, this boy equals that of the average boy of* 11 *or* 12 *years.*)

Ossification of metacarpal and carpal bones is far in advance of the normal development for his age; equals that of a 12 year old boy.

Dentition: No permanent teeth present.

Hirsutes: There was an increased growth of hair about his legs and forearms, but none about his chest. The growth of pubic hair was extensive. The genitalia, both penis and testes, equal in development those of a normal adult (penis length, when flaccid, 3¾ inches).

Mental Development: Retardation of mental development apparent. (Evidence on which this statement was based not reported by examiners.) Talked at age of 12 months.

In the report of this case the author presents a photograph contrasting the development of this subject with the development of a normal boy of 10 and a normal boy of 4½ years. A second photograph contrasts his genitals with those of the normal boy of 4½ years. Two others illustrate ossification of the wrists of this subject and those of the normal boy of 4½ years.

Case 3. (Thoms and Hershman 1923.) Girl of Russian-Jewish parentage. Chronological age when examined, 3 years 11 months. Birth normal. First of two children. Walked at 11 months. At 1 year, breasts were noticed to be larger than normal. At 3 years 7 months, first menstrual flow appeared and continued four days. The second period came 6 weeks later, the third after 3 weeks, and the fourth after an interval of 8 weeks. Her figure resembled that of a mature woman of child-like stature. At the time of examination the breasts resembled those of an adult and had well developed nipples and areola. Pubic hair was moderately thick, but there was no axillary hair present. The labia of the external genitalia were well developed.

Physical Development: Height at 3 years 11 months, 42 inches. (Range of height for four year old American children is between 35 and 43 inches; average approximately 39 inches.) Weight: 50

pounds. (Average weight for children of 4 years with average height is approximately 34 pounds.) Ossification: radiograms of wrists show, besides the centers normally present at this age, the trapezoid which usually appears at 6 years, the pisiform which usually appears at 6½ years, and the styloid process of the ulna which is seldom seen before the eleventh year.

Dentition: About normal. Tooth eruption began at 7 months.

Mental Development: Has a mental age of 3½ years. Was slightly below normal in motor, language, and performance tests. (Psychological examination was reported by Professor Arnold Gesell, M.D., Ph.D., of the Yale Psycho-clinic.) She presented no symptoms of marked precocity in personality traits, evidence of psychopathic personality or mental deficiency.

The report gives photograph of the child, illustrating her precocious physical development.

Case 4. (Tierney, 1922. Case II.) Boy of American parentage. Chronological age when examined, 6 years. Weight at birth 9½ lbs. Birth premature by 5 or 6 weeks. Patient afflicted with epileptiform seizures and increasing nervousness.

Physical Development: Height, at the time of examination, 56 inches. (Normal height for boys of 6 years ranges between 43 and 49 inches, with an average falling at approximately 46 inches. This boy's height approximates the average height of 11 year old American boys.) Symphysis to soles of feet, 27 inches. Symphysis to vertex, 29 inches. Span 54½ inches. Weight is 79 pounds. (Average weight for a boy whose height is 56 inches is approximately 78 pounds. Average weight for a boy of 6 whose height is average is 48 pounds.) Unusually well developed musculature. Radiograph of hand and wrist shows all carpal centers fully developed, all epiphyses closed throughout the hand, and practically complete closure of radius and ulna which normally should not occur until the eighteenth or twentieth year.

Dentition: No reference made.

Well developed secondary sex characters. Genitalia show marked precocity of development. Penis (flaccid) measures 4¾ inches.

Mental Development: Mental age, roughly determined (tests not mentioned) was between 4 and 5 years. Child is emotionally unstable. Has speech disturbance. Abnormal behavior and conduct manifested by inaccessibility, lowered attention, disturbance of facility and sequence of the train of thought, impaired critique and judgment.

Tierney presents several photographs of this case. The first,

showing the child standing in front of his father, illustrates the child's abnormal height. The second contrasts his genitals with those of a case of hypogonadism in a man of thirty years. The third and fourth are skiagraphs of the subject's hand and wrist contrasted with the hand of a normal 6 year old boy. Another photograph contrasts the somatic and genital development of this case with case 2 above and of No. 15 of Table I.

TABULAR SUMMARY OF DATA FROM 62 CASE HISTORIES WHICH CONTAINED DATA ON THE MENTALITY OF THE SUBJECTS

From the reports of 62 cases in which remarks were given concerning the mentality of the subjects we have abstracted the salient data depicting their somatic and mental characteristics. These data are brought together in Table I. To each case a reference number is given; this, together with a letter designating the subject's sex, appears in column 1. The reference numbers which appear again in the bibliography will enable the reader to find the article from which the case was taken. Column 2, headed "Diagnosis" states the disordered gland to which the condition of puberty praecox was attributed. Column 3 gives the bases on which this diagnosis rests. From a consideration of the clinical reports it would seem that puberty praecox arises from or is associated with, pathology or abnormal functioning of the gonads, the pineal body, or the suprarenal glands. Cases 1 to 16 of Table I are associated with disturbances of the gonads; cases 17 to 23, with pineal disturbances; and cases 24 to 32 with suprarenal disorders. The remaining cases, numbering from 33 to 62, are thrown together because no diagnosis of any sort was reported by the examining physician.

Column 4 gives the ages of subjects at the time of clinical examination. Data on mentality are given in column 5. We have reported by direct quotation or abstract all pertinent data given. Occasionally remarks on the personality of the subject as well as grade of mentality appear in this column.

Columns 6 and 7 state the height and weight of the subject. To aid the reader in appreciating the degree of acceleration or retardation for each case we have given in parentheses the average height and weight and the ranges of heights and weights for children of similar ages. In a few instances the author presents norms for children of the same nationality as the case being reported; these we have quoted. If standards are not reported by the author we have supplied them from the records of American

school children. Norms for American children between the ages of 6 and 18 were taken from the Baldwin-Wood "Weight-Height-Age Table for Boys (and Girls) of School Age." For children whose ages fall below six years the norms were taken from Woodbury's " Weight-Height-Age Tables for Boys (and Girls)."

Column 8 gives data relative to the ossification of bones. Since the practice of making radiograms of the skeleton is of relatively recent date only a few case histories are accompanied by radiographs. Remarks on dentition are given in column 9. Columns 10 and 11 give data pertaining to the secondary sex characters and the accessory sex apparatus. The last column serves as a "catch all" for miscellaneous data and remarks not properly falling under any of the previous captions.

In a very rough way the cases reported in each of these large groups associated with particular glandular disturbances are arranged according to descending degrees of brightness as judged from the remarks on mentality. No great significance is attached to this ranking, however, because we appreciate the likelihood of these data being very unreliable. How unreliable, no one can say with exactness at the present time.

TABLE 1.

Abbreviations Used.

C.A.=Chronological age.
Developm.=Development.
Exam.=Examination.
Gen.=General.
M=Middle or median figure given by Baldwin and Wood for height or weight.
M.A.=Mental age.

Menstru.=Menstruation or menstrual.
N=Normal.
Ossif.=Ossification.
R=Range from shortest to tallest height given as normal for a given C.A. by Baldwin and Wood.

Case	Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
1 (22)	F	Hypersecretion of ovaries. Possibly pineal involvement.	Inferred from exam.	18 yrs.	At 18 mos. spoke like child of 4 yrs. Read at 5 yrs. Was one of brightest pupils in school. Mentally very bright and active, a great reader. As a child refused to play with older children because "they were stupid". Bad disposition.	54 in. M=64 in. R=61–67 in.	160 lbs. M= 71 lbs.
2 (8)	F	Sarcoma right ovary.	Operation. Histological exam.	5 yrs., 10 mos.	As a child, mentally bright.	50 in. M=45 in. R=43–47 in.	58 lbs. M=58 lbs.
3 (11)	F	Ovarian hypersecretion.	Inferred from exam.	3 yrs., 6 mos.	Mentally bright. (Exceedingly obstinate.)	44 in. M=36 in. R=32–40 in.	52 lbs. M=42 lbs.
4 (20)	F	Carcinoma of ovary.	Hist. exam. probable.	7 yrs., 4 mos.	Was intelligent for age.	Normal	.....
5 (14)	F	Ovarian disorder, perhaps tumor.	Inferred from exam.	13 yrs., 6 mos.	Normal. Attends school and progresses well. Psychically infantile. Facial expression a little old for age. No apparent mental precocity.	52 in. M=60 in. R=57–64 in.	.....
6 (16)	F	Ovarian tumor.	Inferred from exam.	6 yrs., 3 mos.	Good pupil in school. (Psychically childish in activity and play. Shy and easily embarrassed.)	.....	.....
7 (42)	F	Precocious pregnancy.	Childbirth.	10 yrs., 3 mos.	Child-like in aspect.	.....	.....

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
1 (22)	F	Ossif. of epiphyses of lower femur, upper tibia and fibula, lower humerus. Elbow of adult. Lower epiphyses of radius and ulna closed. Ossif. of carpal, metacarpal bones and phalanges complete.	Normal.	Bet. age 8 and 9 breasts began to develop; grew unusually large. Menstru. began at 11 yrs. (First became obese at 5 mos. Second increase in adiposity at 9 yrs. Fat pads over shoulders, lower abdom., thighs, and buttocks, at time of examination).	Hair very thick and coarse Axillary and pubic hair scanty at 11 yrs. Slight moustache.	Hebrew parentage. Walked at 17 mos. Growth became slow at 11 yrs. and stopped entirely at 13 yrs. giving infantile skeletal proportions.
2 (8)	F		Normal. All of milk teeth present.	Menstru. began 5 yrs. After first menstru. period, breasts grew larger, whole body developed rapidly, areolae of breasts darkened.	Pubic and axillary hair developed after first menstru. period.	After removal of tumor, recession of precocious characteristics.
3 (11)	F	Carpus including pisiform found N. at 12 yrs. Patella ossified completely. Lesser trochanter of femur present. (Normally occurs about 13-14 yrs.)	Precocious. Had 8 teeth at 10 mos. (N. is 4 teeth at 10 mos.)	Normal up to 10-11 mos., then white vaginal discharge. Menstru. began at 17 mos.; periods fairly regular. Breasts well formed.	Pubic hair, in female distribution, at onset of menstru. None in axillae.	Stout and large for age. Voice harsh and strident. First child.
4 (29)	F	Advanced ossification of wrists.		Showed precocious development. Breasts large	Pubic hair present.	
5 (14)	F	All the epiphyseal fissures of upper and lower limbs completely grown together. Growth ceased at 8 yrs.		Breasts large at 6-7 yrs., at age of 13 were decreasing. Menstru. when few mon. old. (Hips, thighs, and legs large.)	Axillary and pubic hair well developed.	Abnor. growth up to 7-8 yrs. then stopped. Makes N. childlike appearance. No erotic development. Only child.
6 (16)	F			Menstru. at 16 weeks. Secondary sex char. at age 6½ equals those of mature woman of 22 yrs. Breasts large.		Observed again at 12 yrs. Shy and childish. Cries when children laugh at her large breasts.
7 (42)	F			Menstru. since 5 yrs. At age of 10 yrs. 3 mos. gave birth to a well formed child weighing 5 lbs. No mammary enlargement of milk.		

Case	Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
8 (36)	F	Hypersecretion of ovary.	Inferred from exam.	3 yrs., 11 mos.	Aver. intelligence. M.A. 3½. No evidence of psychopathic personality or mental deficiency. Slightly below N. in motor, langauge, and performance tests. (Given by Dr. Gesell, Yale Psycho-Clinic).	42 in. M=39 in. R=35-43 in.	50 lbs. M=39 lbs.
9 (38)	F	Cyst of one ovary.	Operation.	13 yrs., 8 mos.	"As usual the psychic and mental development has in no way kept up with the physical development."	.....	.....
10 (42)	F	Ovarian sarcoma.	Operation.	7 yrs.,	Intellectually dull and below the average.	.....	.....
11 (17)	M	Exaggerated hormone activity of sex gland.	Inferred from exam.	3 yrs.	Mental development far beyond his age. Behavior toward his surroundings that of boy of 7 or 8.	"44½ in. M=35½ in.	.....
12 (37)	F	Hypergonadism.	Inferred from exam.	15 yrs	Normal or rather better than normal mentality.	59 in. M=63 in. R=60-66 in.	103 lbs. M=95 lbs.
13 (37)	M	Hypergonadism.	Inferred from exam.	4 yrs., 4 mos.	Mental development fair. Child is backward.	53 in. M=39 in. R=35-43 in.	81 lbs. M=68 lbs.
14 (40)	F	Genito somatic: Evolutio praecox corpis.	Inferred from exam.	14 yrs., 11 mos.	(Approx. I.Q. 100) Tested when 10 yrs. ½ mo. old. Performance corresponded to that of norms for girls of 10 yrs. 1 mo. (is superior to approx. 53% of children of her age.) Entered school at 9 yrs. (held out because of nervousness). Poor in school work.	.....	.....
15 (37)	M	Hypergonadism.	Inferred from exam.	10 yrs.	M.A. 4 yrs. Feeblemindedness of inherited type, congenital. Mild grade imbecile as to reactions in type and manner of response. Score on Yerkes Bridges Point Scale, 17. In first grade at school for 3 yrs. Works diligently, but cannot master. Memory poor.	.....	.....

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
8 (36)	F	Beside N. centers of wrists, trapezoid present which usually appears at 6 yrs. Styloid, process of ulna present, seldom seen before 11th year.	Normal. Dentition at 7 mos.	Menstru. began at 3 yrs. 7 mos. Breasts started to enlarge at 1 yr. When examined were those of adult, with well developed nipples and and areola. External genitalia show labia to be well developed.	Pubic hair covers pubes and is moderately thick. None in axillae.	Well nourished and plump. Impression of well developed mature woman of child-stature. Russian-Jewess. First of 2 children.
9 (38)	F			Menstru. for 3 periods; began at 13 yrs. 5 mos. For 2 yrs. mammae large; when examined were exceptionally large. Genitals very large. Uterus N. in size.	Thick hair over pubes and axillae. Head hair very heavy and long.	Very pronounced feminine characteristics.
10 (42)	F			Breasts unusually large from birth. At 6½ yrs. bloody vaginal discharge. External genitalia of unusual size.	Pubes covered with hair.	Tumor removed followed by a diminishing of precocious development.
11 (17)	M			Penis 7-8 cm. long. Erections observed. Testicles size of post-pubertal age.	Pubic hair well developed. Characteristic triangular shape absent. Few axillary hairs.	Height greater than measurement given as he had pronounced bow-legs. Esthonian.
12 (37)	F	All carpal bones present in hand and forearm. Heads of metacarpals united to body (N. at 20 yrs.) Heads of all phalanges united to body. (N. fr. 18-20 yrs.) Premature ossif. of pelvis (N. at approx. 20 yrs.)	First tooth at 8 mos., a little late. N. appears at about 6 mos.	Menstru. began at 6 mos., regular at 6 yrs. Mammary development good. Labia majora and minora underdeveloped; clitoris and prepuce well developed.	N. growth of pubic hair, also N. growth of hair on legs and arms.	Gen. development N. until 7 or 8 yrs. when disproportion in length of arm as compared with torso and legs was noted. After ninth yr. practically no further growth in height. General appearance short and stocky. Walked at 12 mos.
13 (37)	M	Ossif. of hand of about 12 yr. old. Advanced development of metacarpals, and all carpal bones present.	Normal. No permanent teeth present. Canines prominent.	Penis and testes show development of normal adult.	Increased growth of hair on legs and forearms. Extensive pubic hair. None on chest.	Extremely large at birth. Weight at birth 12½ lbs. Development rapid.

Case	Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
13 (37)	M	Ossif. of hand of about 12 yr. old. Advanced development of metacarpals, and all carpal bones present.	Normal. No permanent teeth present. Canines prominent.		Penis and testes show development of normal adult.	Increased growth of hair on legs and forearms. Extensive pubic hair. None on chest.	Extremely large at birth. Weight at birth 12¼ lbs. Development rapid.
16 (35)	M	Hypergonadism.	Inferred from exam.	11 yrs., 6 mos.	M.A. 4 yrs. Imbecile. Learns poorly, has been in first grade for 3 yrs. (There when at 11½ yrs. old). Very poor memory. Detailed mental performance cited in reference.	60 in. M=56 in. R=53-59 in.	85 lbs. M=94 lbs.
17 (4)	M	Pineal (cerebral tumor destroying pineal gland).	Autopsy.	5 yrs., 6 mos.	Superior mentality. Interested himself greatly in questions of eternal life and life after death, without having been influenced to such thoughts by his environment.	*48⅞ in. M=41⅝ in.	.....
18 (23)	M	Pineal tumor.	Inferred from exam.	5 yrs., 7½ mos.	Very rapid mental development.	*48⅞ in. M=41⅝ in.	.....
19 (14)	M	Pineal tumor.	Autopsy.	7 yrs., 6 mos.	Mental development normal for age.	*50⅞ in. (5½ in. above N.)	*61.3 lbs. (10.6 lbs. above N.)
20 (23)	M	Pineal tumor.	Inferred.	10 yrs.	Intelligence normal. Clear mentally. Apathetic, memory good.	*54⅞ in. (N. for 13 yr.)	*86 lbs. (N=55.1 lbs.)
21 (23)	M	Pineal tumor.	Inferred.	3 yrs., 10 mos.	Mentally clear, precocious development. At onset of disease began to be dull.	*42½ in. (N=36½ in.)	*44.1 lbs. (N=35.3 lbs.)
22 (1)	M	Pineal tumor.	Autopsy.	12 yrs.	Mental exam. showed merely a lack of retention in Ziehen's combination memory test. Marked slowing of all responses.	.....	.....
23 (23)	M	Pineal tumor. (Possibility of of adrenal tumor.)	Inferred from exam.	23 mos.	M.A. about 16 or 18 mos. Delayed mental development. Facial expression of older child, but not very bright. Both saw and heard. Language limited to "papa" and "mama".	.....	.....
24 (5)	M	Adrenal tumor.	Autopsy.	4 yrs., 9 mos.	Bright and precocious mentality.	.....	.....

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
14 (40)	F			Began to menstru. at 20 mos. Regular since 2 yrs. old.		"It appears that her precocious physical developm. and her mother's training which has kept this before the child's mind, has played some part in the developm. of the temperamental condition which is so obvious."
15 (37)	M	Skull: calvarium generally thickened and coronae sutures closed. Sella turcica deeply and vertically placed, but small.		Precocious genital development.		Build short and heavy. Hands short, stubby, and broad. Fingers short and thick. Extremely large for age. Willingly does as told, but must be told frequently.
16 (35)	M	Skull: slightly enlarged sella turcica, and moderate increase in size of skull. Hand ossif. normal for C. A.	Slightly advanced. Had 28 perfect teeth.	Very precocious genital development. Penis 10.6 cm. long. Vigorous erections. No evidence of spermatozoa.	Pubic hair abundant.	Birth N. Growth slow up to 5 yrs. Slender build. Musculature flabby and poorly developed. Ruthenian, immigrant parentage.
17 (4)	M			At 5 yrs. unusual growth of penis, 7 cm. in length. Very noticeable erections. Testicles large. Voice became exceptionally low.	Pronounced pubic hair and short hair on legs. No hair in axillae. Head hair N.	Normal up to third yr. then sudden growth. Characteristic tumor symptoms—eye strain, headaches, and sleeplessness. German case.
18 (23)	M			Penis 7 cm. long. Voice deep.	Precocious growth of pubic hair.	Well developed and proportioned. Appearance of 18 yr. old boy. Growth N. up to third yr. German case.
19 (14)	M	Bone development normal.		Penis large, 8 cm. long, 17 mm. diameter. (13 mm. N. for 10 yr. old boy.) No spermatozoa.	Hair on pubes and axillae at 7 to 9 mos. Hair on upper lip and chin, ½ cm. long.	Gen. physical developm. of 10-12 yr. old boy. Musculature N. German case.

19 (14) ..... M	Bone development normal.		Penis large, 8 cm. long, 17 mm. diameter. (13 mm. N. for 10 yr. old boy.) No spermatozoa.	Hair on pubes and axillae at 7 to 9 mos. Hair on upper lip and chin, ½ cm. long.	Gen. physical developm. of 10-12 yr. old boy. Musculature N. German case.

Case Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
25 (7) ..... M	Adrenal tumor.	Autopsy.	4 yrs., 9 mos.	A bright, precocious child, given to making shrewd and quaint remarks which showed considerable powers of observation.	36 in. M=41 in. R=37-45 in.	61½ lbs. N=31 lbs.
26 (7) ..... F	Adrenal tumor.	Autopsy.	2 yrs., 9 mos.	Precocious in intelligence. (When irritated, language more voluble than refined.)	33 in. M=36 in. R=32-40 in.	37½ lbs. N=25 lbs.
27 (31) ..... F	Suprarenal tumor.	Operation and removal.	3 yrs., 3 mos.	Normal. Intellectual development approximately corresponds to age.	*39½ in. N= 36½ in.	.....
28 (9) ..... F	Suprarenal tumor.	Operation and removal.	2 yrs., 6 mos.	Mental development apparently normal.	.....	.....
29 (3) ..... F	Suprarenal tumor.	Autopsy.	11 yrs.	Expression heavy and dull.	52 in. M=56 in. R=52-54 in.	123 lbs. M=64 lbs.
30 (5) ..... F	Suprarenal tumor.	Autopsy.	5 yrs.	Bright and intelligent. After onset of disease became dull and listless.	.....	.....
31 (26) ..... F	Suprarenal tumor.	Autopsy.	3 yrs.	Very silent, but little impression could be made upon her. She had a peculiar sullen look.	34½ in. M=36 in. R=32-40 in.	44 lbs. M=26 lbs.
32 (27) ..... F	Suprarenal tumor.	Autopsy.	3 yrs.	Seemed almost idiotic. Had nothing childish about its aspect, voice, or manner, was rude and savage. Parents said that prior to illness was docile and by no means wanting in intelligence.	35 in. M= 36 in. R=32-40 in.	(Very fat).
33 (41) ..... M	None made.		2 yrs., 11 mos.	Intelligence said to be apparently equal to that of a six yr. old child. Some mature observations and inquiries seemed to be the result of mature reflection.	40½ in. M=35 in. R=35-40 in.	51½ lbs. M=36 lbs.

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
20 (23)	M			Genitals small, perhaps due to pressure of tumor causing atrophy of pituitary.		Hydrocephalus. Tall and very fat. Feeble muscularly. At 8 began to grow rapidly. French case.
21 (23)	M			At 3 yrs. rapid development. Penis at time of exam. was 9 cm. long. Voice low. Breasts slightly developed, 2 cm. high.	Profuse pubic hair.	Gait slightly spastic and insecure. Quiet and shy. About developm. of 7 or 8 yr. old child.
22 (1)	M				No genital hair. Chin downy.	Large for age. Very fat, waxy, and pale.
23 (23)	M	Bony development corresponding to about that of 6½ yr. old child. No enlargement of the sella turcica.	Normal. 20 teeth. Uppers decayed. Early cutting of teeth.	Penis very large, 7½ cm. long. No evidence of sexual feeling or spermatozoa. Testicles large.	Abundant pubic hair, slight excess of hair about nipples and legs.	A gen. but symmetrical physical overdevelopment and precocious sexual development in association with delayed mental development. Finnish.
24 (5)	M			External sexual organs not unduly developed.	Hair on face and pubes.	Enormously fat. First symptoms at 2 yrs.
25 (7)	M			Genitals normal for age.	Coarse hair on back and pubes. Incipient moustache. Downy hair on cheeks and chin.	Precocious obesity from 2 yrs. of age.
26 (7)	F			Breasts large and pendulous. Genitals infantile. No menstru.	Pubic hair 1 in. long. None in axillae or on face. Head hair thick and abundant.	Appearance of a stout little woman about the climacteric period. Fat more pronounced around neck, chest and flanks.

26 (7) .....F			Breasts large and pendulous. Genitals infantile. No menstru.	Pubic hair 1 in. long. None in axillae or on face. Head hair thick and abundant.	Appearance of a stout little woman about the climacteric period. Fat more pronounced around neck, chest and flanks.		

Case Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
34 (7) .....M	None made.	.....	4 yrs.	Intellectually bright. (Terrible temper).	43½ in. M=39 in. R=35-43 in.	72 lbs. M=41 lbs.
35 (42) .....F	None made.	.....	2 yrs., 7 mos.	Bright and intelligent. (Tastes those of older child. Irritable.)	N.	N.
36 (10) .....F	None made.	.....	3 yrs., 4 mos.	Hospital observation over long period showed mental developm. to be beyond yrs. Mother thinks intell. has developed normally, if anything a little precocious and beyond her other children.	40 in. *(36½ in. N. for 4 yrs.)	51.4 lbs. *(32 lbs. N. for 4 yrs.)
37 (18) .....M	None made.	.....	3 yrs., 11 mos.	Countenance, although precocious, is indicative of the child, so also is his intellect. Speaks distinctly.	48½ in. M=39 in. R=35-43 in.	82 lbs. M=52 lbs.
38 (42) .....F	None made.	.....	6 yrs.	Her general intelligence was good.	.....	.....
39 (42) .....F	None made.	.....	4 yrs.	Mental disposition childlike.	.....	.....
40 (42) .....F	None made.	.....	6 mos.	"Expression intelligent."	.....	.....
41 (42) F.....F	None made.	.....	6 yrs.	Intellectually not above level of her age.	.....	.....
42 (42) .....F	None made.	.....	5 yrs., 6 mos.	Mental qualities merely those of child of her age.	60 in. M=40 in. R=36-44 in.	.....

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
27 (31)	F			Genitals give appearance of grown woman. Clitoris of penis-like construction. Breasts about N. Abnormal developm. of glands. Nipples strongly pigmented.	Had pubic hair at 3 mos., now very thick. Whole body covered with abnorm. developm. of hair. Traces of moustache and axillary hair.	Pale and sickly. Frequent illnesses, colic, trauma, fever. Walked at 1 yr. and talked at 1½ yrs. German case.
28 (9)	F			Regular menstru. present for 9 mos. Breasts well developed, 1¾ in. diameter. External genitalia of markedly adult type.	Coarse growth dark hair on pubes.	Small and thin in general development. Irish case.
29 (3)	F			Breasts of sexually mature woman. Menstru. present.	Pubic hair.	Body covered with layer of fatty tissue, in places 1 in. thick. N. up to 10 yrs. Appear. of woman 40 yrs. old. English case.
30 (5)	F			No menstru. Uterus N. No hypertrophy of clitoris or breasts.	Profuse hair on pubes, scalp, upper lip and back.	Fat and flabby. Unable to stand, no paralysis.
31 (26)	F		"Her mouth was full of teeth."	Genitals large and well developed.	Unusual amount of hair over whole body, especially over pubes and eyebrows. Decided moustache on upper lip.	Unusually stout. English case.
32 (27)	F			Genitals very large and prominent. No menstru. Voice always rough.	At 1 yr. body covered with short, dark hair. Decided moustache. Pubic hair unusually long and bushy.	Skin very brown and gypsy-looking, attributed by Dr. Pitman to the reaction of the suprarenal capsules upon the skin. English case.

Case	Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
43 (42)	F	None made.		5 yrs., 4 mos	Intellectual and moral faculties not precocious. Expression somewhat childish.	43 in. M=40 in. R=36-44 in.	52½ lbs. M=41-lb.
44 (42)	M	None made.		4 yrs.	"Though the boy is completely evolved, his faculties are those of a child." Expression childlike and intelligent.	43 in. M=39 in. R=35-43 in.	64 lbs. M=41 lbs.
45 (29)	F	None made.		12 yrs.	Mental development normal for age.	57 in. M=58 in. R=54-62 in.	79½ lbs. M=84 lbs.
46 (29)	F	None made.		11 yrs.	Mental development normal for age.	61 in. M=56 in. R=52-59 in.	106 lbs. M=108 lbs.
47 (29)	F	None made.		11 yrs.	Mental development normal.	60 in. M=56 in. R=52-59 in.	175 lbs. M=101 lbs.
48 (29)	F	None made.		10 yrs.	Mentality normal for age.	54½ in. M=54 in. R=50-57 in.	71½ lbs. M=75 lbs.
49 (34)	M	None made.		4 yrs.	"Seems intelligent" though speech imperfect.	48½ in. M=39 in. R=35-43 in.	70 lbs. M=52 lbs.
50 (29)	F	None made.		12 yrs.	Mentally bright though somewhat backward in school.	64½ in. M=58 in. R=54-62 in.	154 lbs. M=125 lbs.
51 (42)	M	None made.		14 yrs.	Education defective as he had never attended school.		

Case	Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
43 (42)	F	None made.		5 yrs., 4 mos	Intellectual and moral faculties not precocious. Expression somewhat childish.	43 in. M=40 in. R=36-44 in.	52½ lbs. M=41-lb.
44 (42)	M	None made.		4 yrs.	"Though the boy is completely evolved, his faculties are those of a child." Expression childlike and intelligent.	43 in. M=39 in. R=35-43 in.	64 lbs. M=41 lbs.
45 (29)	F	None made.		12 yrs.	Mental development normal for age.	57 in. M=58 in. R=54-62 in.	79½ lbs. M=84 lbs.
46 (29)	F	None made.		11 yrs.	Mental development normal for age.	61 in. M=56 in. R=52-59 in.	106 lbs. M=108 lbs.
47 (29)	F	None made.		11 yrs.	Mental development normal.	60 in. M=56 in. R=52-59 in.	175 lbs. M=101 lbs.
48 (29)	F	None made.		10 yrs.	Mentality normal for age.	54½ in. M=54 in. R=50-57 in.	71½ lbs. M=75 lbs.
49 (34)	M	None made.		4 yrs.	"Seems intelligent" though speech imperfect.	48½ in. M=39 in. R=35-43 in.	70 lbs. M=52 lbs.
50 (29)	F	None made.		12 yrs.	Mentally bright though somewhat backward in school.	64½ in. M=58 in. R=54-62 in.	154 lbs. M=125 lbs.
51 (42)	M	None made.		14 yrs.	Education defective as he had never attended school.		

Decided moustache. Pubic hair unusually long and bushy.

Pitman to the reaction of the suprarenal capsules upon the skin. English case.

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
33 (41)	M	(Bones in legs somewhat curved, no doubt caused by wt. of trunk when bones had but little resistance.)	Normal. Cut 2 lower incisors at 7 mos.; at 9-10 mos. had 20 teeth, all in at 30 mos. Shedding precocious by 1 mo.	Genitals as fully developed as adult. Change of voice. These changes noticed after end of first year when rapid growth set in.	Pubic hair abundant. Head hair heavy, even at birth. No beard but steatomatous matter visible in skin.	Unusual muscular development. (Very detailed in report.) Viewing body from pelvis upward he is nearly "exact representation of Farnese Hercules reduced."
34 (7)	M	Ossif. of all carpal bones in wrist. One knee equals the develoment of boy 17-18 yrs. old.		Penis and testicles large as a young adult. (Frequent erections and nocturnal emissions.) Voice deep bass, not under full control.	Unusual growth of hair over whole body, especially over pubes and lumbar region.	Precoc. growth began at 2 yrs. Muscular development remarkable especially in thighs. Great physical strength.
35 (42)	F	Advanced ossification of wrists.		Menstru. began at 4 mos. Regular. Breasts and genitals well developed.	Hair on pubes.	
36 (10)	F	Epiphyses normal, no ossification. Normal hypophysis and normal relations with skull.	Normal; 20 milk teeth present.	No menstru. or breast development. Genitals normal developm. except clitoris which was large and penis-like. Urethra opening in clitoris. No ovaries. Uterus pencil shaped and sized. Voice deep and coarse, with range of adult man.	Whole body thickly covered with dark hair, well developed moustache, heavy head hair. Pubic hair longer and heavier than adults. Growth began at 1 yr. 8 mos.	Entire skin strongly pigmented. Turned brown with onset of precocious development and growth of hair. Physical structure masculine, athletically built. Musculature extraordinarily developed. German case.
37 (18)	M		Precocious. Had 20 teeth. Infantile dentition complete at end of first year. (N. at end of 32 mos.)	Genitals in fair proportionate developm. to rest of body. Penis 4 in. long. Testes undescended. No evidence of sexual maturity. Voice deep. Mammae large and prominent.	Abundant pubic hair. Has whiskers and growing beard. Axillary hair present.	Great muscular and physical strength. Can lift man of 140 lbs., and cut with an axe a log of wood as large around as his own body. Mulatto.
38 (42)	F			Normal until menstru. began at 3 yrs. Continued for next 18 mos.	Unusual growth of hair at 4 yrs. At 6 yrs. entire body covered. Pubic greater than adults. Also abundance on lower limbs and cheeks. Chin bearded.	

Case	Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
52 (42)	M	None made.	.....	4 yrs., 3 mos.	Mentally sluggish. (Stubborn, self-willed).	46½ in. M=39 in. R=35-43 in.	54 lbs. M=48 lbs.
53 (7)	M	None made.	.....	3 yrs.	Wits dull.	54 in. M=37 in. R=33-40 in.	.....
54 (42)	F	None made.	.....	9 yrs.	Mental powers were dull.	N.	N.
55 (29)	F	None made.	.....	10 yrs., 6 mos.	Mentally backward.	46¾ in. M=54 in. R=50-57 in.	51½ lbs. M=50 lbs.
56 (42)	F	None made.	.....	5 yrs., 6 mos.	Mentally defective.	.....	.....
57 (44)	M	Gigantism.	.....	8 yrs.	Mentally defective. Statement based on school achievement and color discrimination.	*54¾ in. M=36½ in.	.....
58 (42)	M	None made.	.....	6 yrs.	Became feebleminded and almost an imbecile after his sixth year.	60 in. M=46 in. R=43-49 in.	"Proportionately big."
59 (29)	F	Cretin.	.....	9 yrs.	Spoke but few words.	36 in. M=52 in. R=49-55 in.	47 lbs. M=31 lbs.
60 (29)	F	None made.	.....	9 yrs.	At 8 yrs. sent to school for mental defectives. Never could learn to talk, speech slow, limited to "pa" and "ma."	47½ in. M=52 in. R=49-55 in.	55 lbs. M=51 lbs.

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
39 (42)	F			Menstru. began at 2 weeks. Regular. Perfect little woman. Breasts; external and internal genitalia of pubescent woman.	Absence of pubic hair.	
40 (42)	F			Menstru. began at 6 mos. Breasts large.	Head hair coarse and long.	General developm. of body premature.
41 (42)	F			Genital and breasts developm. of 17 yrs. old. Menstru. began as a bloody discharge at 6 mos.	Head hair abundant and long.	At 6 yr. size and development of 10 yr. old.
42 (42)	F		Precocious. Cut incisors by 6 mos. (N. at 20 mos.) and molars by 9 mos. (N. at 30 mos.)	Menstru. began at 18 mos. Regular. Well developed breasts and genitals.	Head hair long and beautiful.	Bodily development proportionate to height.
43 (42)	F		First tooth at 9 mos. (N. at 6 mos.) Had all milk teeth (normal).	Menstru. began 3½ yrs. Genitals abnormally developed. Breasts larger and more protuberant than most girls at puberty.	Pubic hair present. Head hair abundant for age.	Large at birth. Presents appearance of short, thick-set young adult.
44 (42)	M	(Bones of legs are bent forward and outward.)	Precocious. First dentition complete before second yr. (N. at 30-32 mos.)	Genitals unusually large at birth. At 4 yrs. had genitals of a man, glans penis quite uncovered Voice deep and hoarse.	At birth body covered with black hair. Pubic hair thick. Upper lip hairy as 16 yr. old. Trunk hairy, especially the back.	Grew rapidly after 15 mos. Size and shape of head unusual. Neck short and thick. Trunk of adult, chest large. Muscular system well developed, can easily lift 50 lbs. with one hand.
45 (29)	F			Menstru. began at 10 yrs. Breasts very large.	Marked pubic and axillary hair.	Developm. normal up to 9 yrs., then sudden growth.
46 (29)	F		Precocious. First dentition at 1 yr. (N. at 30-32 mos.)	Menstru. began at 11 yrs. External genitals fully developed.	Pubic and axillary hair.	At 3½ mos. size of average 1 yr. old. Thyroid enlargement at 10 yrs.

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
46 (29)	F		Precocious. First dentition at 1 yr. (N. at 30-32 mos.)	Menstru. began at 11 yrs. External genitals fully developed.	Pubic and axillary hair.	At 3½ mos. size of average 1 yr. old. Thyroid enlargement at 10 yrs.
55 (29)	F			No menstru., no overdevelopm. of genitals. Hypotricosis. (Marked adiposity)		
56 (42)	F			Menstru. began at 18 mos. Breasts began to enlarge and increase in size.		Pelvic measurements of 12 yr. old.
57 (44)	M			Genitals well developed. Strong sexual desires, otherwise behavior of child in play, etc.	At 2 yrs. pubic and axillary hair. At 2½ yrs. hair on legs. Beginnings of brd. apparent.	Great muscular strength evident. German case.
58 (42)	M			At 6 yrs. presented all the signs of puberty.	Beard of man of 40 yrs. Growth began at 5 yrs.	Growth ceased after sixth year. "Man-boy." Very strong.
59 (29)	F		Very retarded. Had 12 teeth which is N. at 26 mos. At 9 yrs. should have 24 teeth, 6 permanent.	At 5 yrs. menstru. began. Breasts began to develop with well shaped prominent nipples	Coarse hair in axillae and around nipples.	After thyroid treatment precocity diminished, whole organism became more childish.
60 (29)	F		Retarded. First tooth at 11 mos. (N. at 6 mos.)	At 6 yrs. breasts enlarged. External and internal genitalia as large as adult. No menstru. Sexual desire present.	Slight growth of hair on extremities and in pubic regions. No axillary hair.	General appearance of pregnant woman. Sat at 6 mos. Walked at 14 mos. Is destructive, wicked, and pugnacious.
61 (37)	M	Hand and wrist: all carpal centers fully developed, all epiphyses closed throughout hand. Practically complete closure of radius and ulna. (N. at 18 to 20 yrs.)		Well developed secondary sex characters. Genitalia show marked precocity. Penis length 4¼ in.		Premature birth (5-6 wks.) Weight 9½ lbs
62 (Letter)	F	"Bone-age" by X-ray exam. about 15-17 yrs.		Menstru. at 10½ yrs. Mature in respect to breast development.	Axillary and pubic hair.	At 11 yrs. had appearance of 16 old.

Case	Sex	Ossification	Dentition	Secondary Sex Characters and Accessory Sexual Apparatus	Hirsutes	Additional
47 (29)	F		Precocious. First dentition at 11 mos. (N. at 30-32 mos.)	No menstru. present. Breasts very fat.	Pubic hair at 9½ yrs. Axillary at 10 yrs.	Wt. at birth 13 lb. 13 oz. Began to talk at 2½ yr.
48 (29)	F			Menstru. not present. Genitals enlarged. At 9½ yrs. sudden breast development.	Pubic and axillary hair at 9½ yrs.	
49 (34)	M		Normal. 20 deciduous teeth.	At birth glans penis uncovered. When examined had genital developm. of man Penis 3½ in. flaccid. Alleged maturity of spermatogenic functions, no direct evidence.	Abundant pubic and axillary hair. Thick down on lumbar and sacral regions.	Miniature model of perfectly developed athlete. Muscular developm. extraordinary. (Given in detail in report.)
50 (29)	F			Menstru. at 10½ yrs., excessive. Breasts markedly large. Genitals, both internal and external, of adult growth.	Beard at 12 yrs. Pubic hair at 10 yrs. Hair all over body and in axillae. Head hair gray.	Tonsils removed at 10 yrs. Goitre noticed few mos. later. Thyroid markedly enlarged.
51 (42)	M			At 15 mos. genitalia unusually large and hairy. At 2 yrs. that of puberty. Between fourth and seventh yrs. signs of sexual excitement and emissions. No spermatozoa.	Pubic hair at 15 mos. Was bearded and had shaved for several months.	Musculature development remarkable, resembling fully grown man.
52 (42)	M			Genitals of a man. Sexual organs grew unduly. After 3 yrs. voice changed.	Pubes hairy.	N. up to 3 yrs. Musculature very great. Masturbator.
53 (7)	M			Arrived at age of puberty by third year. Voice great.		Gait slow. Died at age of 3 with general cramps.
54 (42)	F			Menstru. began at 1 yr. Regular at ninth yr. Mammal and external genitalia fully developed.	Pubes and axillae hairy.	Plump and rachitic. Unable to walk until 20 mos.

Case	Sex	Diagnosis	How Obtained	C.A. at time of report	Mental Status and Data on Mentality	Height	Weight
61 (37)	M	None made.	.....	6 yrs.	M.A. 4-5 years (roughly determined). Abnormal behavior and conduct. Inaccessibility, lowered attention, impaired judgment and critique. Emotionally unstable. Attacks of petit and grand mal.	56 in. M=46 in. R=43-49 in.	79 lbs. M=78 lbs.
62 (Letter)	F	None made.	.....	11 yrs.	In 6th grade. Stood second in class of 45.	63 in. M=56 in. R=52-59 in.	120 lbs. M=118 lbs.

*Foreign Norms.
(For convenience of comparison, foreign height and weight figures have been converted from centimeters and kilograms into inches and pounds. The norms quoted are those given by the individual author, and we assume them to be the norms for that particular nationality.)

ETIOLOGY OF PUBERTY PRAECOX

For detailed information regarding the etiology of puberty praecox, the following articles afford excellent introductions to the subject: Krabbe (1923), Tierney (1922), Gordon (1921), McCord (1914), and Lord (1899). According to the opinions of these men, this disorder results from pathological growth or pathological functioning of the gonads, suprarenal glands, or pineal body. Fifteen of the diagnoses appearing in Table I are based on histological examination of the diseased endocrine organ removed by operation or upon the findings of autopsy. The remaining 16 are chiefly based on clinical symptoms. It is of interest to note that opinions are consistent in attributing this disorder to endocrine disturbances in cases where diagnoses were reported.

MENTAL DEVELOPMENT IN PUBERTY PRAECOX

So far as we could discover from a consideration of the literature, standardized tests for the measurement of mental development have been reported for only five cases of puberty praecox. These are the cases of Morse (1913), Tierney (1922), Thoms and Hershman (1923), and Wheelon (1925). Only about one-third of our 190 case reports contain any remarks whatever on mental development. These remarks, for the most part, consist of only a brief comment, such as the child was bright, dull, or average; and, contrary to our original expectations, the examining physicians rarely offered comments on specific achievements at certain ages which might have served as a basis for roughly estimating the child's intellectual level. In view of these facts, it is obvious that no really scientific deductions concerning the grades of intelligence associated with the phenomena of puberty praecox can be drawn. At best we can only summarize the subjective estimates of physicians separated ofttimes by many decades in point of time, living in different countries, and working with individual criteria of intelligence.

Disregarding the factors of etiology, sex, physical development, etc., and considering all of the cases of Table I together, one gets a somewhat better picture of the estimated intelligence of puberty praecox than when they are taken in small groups according to the various bases of classification. Of the 62 cases of Table I:

21.3% were reported as being above average in intelligence
37.7% as being average, and
41.0% as being below average.

In other words, it is the consensus of opinion among examining physicians that the mental development of cases of puberty praecox tends to be somewhat below the average of normal children. This conclusion coincides with statements of other writers who have reviewed the literature on this subject. Strauch (1918) remarks that: "In striking contrast to the premature development and excessive growth of the body in precocity, is the persistence of the psychic functions in their infantile stage in most cases. The mind corresponds, as a rule, to the real age; their behavior is childish, but the premature awakening of the vita sexualis lends it a peculiar color. Rarely does the psychic progress take place pari passu. In other instances there exists a delayed mental development, a debility, imbecility or even idiocy. In the case of pre-existing weakmindedness, neither in normal nor in premature puberty could any better development of the psychic functions be expected from these biological processes." Roger Williams (1902) who reviews one hundred and four cases of puberty praecox states that: "The mental qualities of these anomalous children never correspond to their sexual or bodily development; either they have the child-like psychical qualities of their age, or they are unusually dull, mentally defective, or even idiotic. . . . The higher tissues and organs also are much more slowly evolved and much less prone to precocity, than the lower ones. This is especially so with the human brain, which appears not to attain its development maximum until very late in life—even up to the fiftieth year, and it is noteworthy that this organ is hardly ever affected (in the direction of precocious development)[1] in cases of precocity."

Attempts have been made by several writers to ascertain whether specific trends of mental development go hand in hand with specific glandular disturbances. With respect to puberty praecox arising from hypersecretion of the gonads, Tierney (1922) states that there is no "mental precocity, rather a tendency to decreased function even to imbecility". Leiner (1920) says that the mentality of the hypergonadal type shows no precocity. The individual is usually retarded and even may not develop beyond the level of imbecility or idiocy. With respect to the ovarian type, Neurath, as quoted by Leiner (1920), reports that their psychic development is not as far advanced as their physical development and that they put away their dolls, etc., because of self-consciousness rather than mental maturity. Our ovarian and testicular

[1] Our phrase in parenthesis.

group presented in Table I has 5 who were said to be above the normal, 4 normals, 5 subnormals, and 2 of imbecile grade.

Tierney (1922) believes that the mentality of suprarenal cases tends to be subnormal. As evidence for a similar generalization Leiner (1920) quotes Pitman's adrenal case which showed idiocy and Colcott-Fox and Bullock and Sequiera's (1905) cases which showed marked intellectual dullness. Of our own collected cases, 3 were reported as being above normal, 2 normal, 3 dull, and 1 defective.

Leiner (1920) believes that mental precocity is not found in puberty praecox except in cases associated with pineal disturbances. He states that, "Mental precocity is very rare and is found in those in whom the pineal is primarily involved, and then only in the male. The mentality in the other types is either unaffected or retarded. The manifest mental precocity is of the child-like imaginative form, and has no real substantial basis."

Our pineal cases of Table I do not conclusively confirm or refute the statement of Leiner. According to the reports, 2 were considered superior, 2 normal, 2 dull, and 2 defective. Taking these data as they stand and those for the other glandular disturbances as well it seems most reasonable to conclude, if any conclusion at all is permissible, that there is no evidence for genuine mental precocity regularly associated with any glandular disturbance underlying puberty praecox. Most probably the rate of mental development, is either unaffected by the glandular disorder or is retarded.

Psychological Examination Desirable: In view of the fact that no more than one-third of the cases of puberty praecox reported in the literature contain any reference whatever to mentality, and still fewer contain objective measures of mental development, it seems pertinent to urge that clinicians who have the rare opportunity of examining a case of puberty praecox add to their routine physical and medical tests a comprehensive psychological examination. Every case of puberty praecox should be looked upon as a miniature field of research for the clinical psychologist as well as the endocrinologist, surgeon, pathologist, or internist. Mental examinations will throw light on such questions as whether a spurt of mental growth is always, sometimes, or never correlated with the spurt of physical development so common in puberty praecox, and whether the mental life of a child who exhibits the somatic signs of puberty is augmented by the emotions, desires, and impulses normal to the pubescent youth of twelve to sixteen years. Objective measures of intelligence will nullify the influence

of the well known size-intelligence illusion confronting those who attempt to estimate intelligence without resorting to standardized measures.

PHYSICAL DEVELOPMENT

While considering the data on physical development one must not overlook the fact that there is a wide range of variability for physical traits in normal children (Baldwin, 1921). Taking due account of these variations, however, it is still apparent that in cases of puberty praecox physical traits are sometimes developed far beyond the extreme ranges for normal children of similar ages.

Height-weight: Forty-five of the 62 cases reported in Table I contained measurements of stature. Of these:

53.3 per cent were above the height of tall children of similar ages as reported by Baldwin and Wood or Woodbury.

33.3 per cent approximated the height for average children, and

13.3 per cent were below the height quoted for short children.

Weight measurements were given for 35 cases. Of these:

71.43 per cent were overweight for their height.

20.99 per cent were normal in weight for their heights, and

8.57 per cent were underweight for their heights.

In a small per cent of cases there is a tendency toward adiposity. This condition prevailed in cases associated with ovarian tumors. The bodily form in such cases takes on the rounded stoutness of maturity, with characteristic fat pads over the legs, thighs, buttocks, shoulders, and breasts. Such fatty deposits tend to increase the body weight greatly above that for the normal child of equal height in its prepuberal stage of development.

Occasionally another type of precocity is found, particularly in the male. It is a tendency toward great muscular development. One such case (No. 33, Table I) is described as a miniature of the Farnese Hercules. His back and shoulder muscles, the arms, thighs, and legs are so well developed that one may easily discern their contours. The child is a miniature athlete and possesses strength that is quite in keeping with the size of his muscles. Ten individuals presenting precocious muscular development are found in the 62 cases of Table I. They are numbers 33, 34, 36, 37, 44, 49, 51, 52, 57, 58.

Ossification: In a few instances the children become abnormally tall during the early years of childhood, but eventually present a dwarfed or disproportionate bodily development owing to the fact that complete ossification of the long bones is precocious.

Growth in stature ceases when the epiphyses and diaphyses of the long bones close. Such a condition is illustrated by Case 1 of Table I. This girl grew very little after the age of eleven and ceased growing entirely at the age of thirteen. At that time her sitting height was markedly disproportionate for her standing height owing to the premature ossification of the long bones of the limbs. Case 12, Table I, presents a similar condition of development.

Among the 62 cases of Table I there are 16 reports on ossification. In all but one of the sixteen cases it was reported that ossification was precocious. Some of these individuals unquestionably fall outside the upper extreme of the range for normal children.

Dentition: Little is said concerning dentition in case reports of puberty praecox. This is rather surprising in view of the fact that physicians have long since been accustomed to examine the teeth of children as a routine measure. Of our 62 cases only 19 contain remarks on dentition. Of these 36.8 per cent are precocious, 42.1 per cent normal, and 15.8 per cent below normal according to the standards set by Noyes (1912). On the whole it would seem that dentition, like other phases of osseous development, is somewhat precocious. The limited amount of data, however, precludes a reliable generalization on this point.

DEVELOPMENT OF SECONDARY SEXUAL CHARACTERS AND SEXUAL APPARATUS

The development of secondary sexual characters and the sexual apparatus are of special interest because they constitute the earliest and most fundamental bases for the recognition of cases of puberty praecox. In the male one usually finds precocious development of the external genitals. Sometimes the penis alone develops while the size of the testes remains normal for the child's age. In other cases both organs rapidly approximate in size the external genitals of the adult. Although vigorous erection of penis has been reported in several instances, ejaculation of semen is rarely reported. (Cases 34, 51, Table I.) In this connection the very ancient and oft quoted statement attributed to Pliny may bear repetition once more. He reported the case of a man who was "an infant, a young man, a mature man, and an old man, was married and begat children, and died, and all in the space of seven years!" For the most part the libido sexualis does not awaken as the sexual organs develop in these very young children, according

to the opinions of most examiners. [Wheelon (1925), Strauch (1918).]

Along with development of the external genitals goes precocious development of the vocal apparatus resulting in a deepening and strengthening of the voice. The child is said to lose its soprano voice in exchange for the bass voice of the post-puberal male. At the same time pubic, axillary, and bodily hairiness puts in its appearance in much the same manner as one normally finds in boys of fourteen to sixteen years. Muscular development has already been mentioned.

In the female, menstruation is ofttimes the first sign of the onset of puberty praecox. It appeared precociously in 28 of the 38 female cases reported in Table I. Usually the menses are irregular and the flow very scanty, but in a few instances a regular periodicity has been claimed. (Cases 3, 28, 35, 39, 42, Table I.) In the ovarian type, breast development, rapid growth of the external genitals, and hypertrichosis follow closely upon the onset of menstruation. The figure of the child sometimes resembles that of the adult woman. Some of the adrenal cases suggest a tendency toward masculinity rather than precocious feminine sexual development. In these cases there may be no menstruation or growth of the breast but marked growth of coarse hair over the body and abnormal development of the external genitals, particularly the penis-like growth of the clitoris. (Cases 27, 36, Table I.) Only one of the 62 cases conclusively demonstrated the early functional maturity of the primary and secondary sexual apparatus. Case 7 of Table I became pregnant at the early age of nine and one-half years. Although the details of this case are incomplete, it would seem from a consideration of the case as a whole that this individual represents a true case of precocious puberty without marked pathological functioning of the gonads. Pregnancy in normal children is not without precedent, however, at the age of ten years.

RACE

While considering the etiology of puberty praecox physicians have given very little attention to the factor of race. Aside from American born children, with racial descent of parents seldom mentioned, we found 6 cases reported as Germanic, 2 as English, 1 French, 1 Esthonian, 1 Ruthenian, 1 Finnish, 1 Irish, 1 Russian-Jew, 1 Mulatto, and 1 American Jew. So far as we could discover no examiner considered race an important factor in the causation of this disorder.

HEREDITY

It seems to be the opinion of most endocrinologists that puberty praecox is an acquired disorder rather than one arising from a distinctly hereditary base. Although statements as to the non-appearance of puberty praecox among near relatives of the patient were found, only two instances of similar disorder within the family were reported. Robinson (1902) writes of two children brought to him for sex identification. One was two weeks of age and the other two years old at the time. Both had well developed pubic hair and the external genitals presented a type of development resembling pseudo-hermaphroditism. An older brother of these children had pubic hair and adult-like genitals at the age of five. Another instance was reported by Stone (1852). The father of the child had become sexually mature at an early age (age not given). From the limited data at hand, however, we could not determine whether the condition of the father properly brings him under the classification of puberty praecox or whether it is only an instance of early sexual maturity appearing in a very normal individnal.

SUMMARY

From the data of 62 cases of puberty praecox containing remarks on mental development the following appear to be legitimate deductions:

1. The rate of mental development tends to be normal or subnormal; it is seldom, if ever, really accelerated. Specific trends of mental development are probably not closely correlated with specific types of pathological development or functioning of the endocrine glands underlying the disorder.

2. Such physical traits as height, weight, muscular development, strength, ossification of bones, closure of epiphyseal junctures, and dentition (?) may greatly surpass the norms for children of similar ages and, quite frequently, they surpass the extreme ranges for American school children of their respective ages.

3. Precocious development of the external genitals and the secondary sexual characters is usually found, although exceptions to the rule have been described. The extent of precocious development in various elements of the sexual organs or the secondary sexual characters is variable from individual to individual.

4. Puberty praecox is considered an acquired disorder arising on a basis of pathological development or pathological functioning

of the glands of internal secretion. There is no evidence pointing to a distinctly hereditary basis.

BIBLIOGRAPHY [1]

Column 1 of Table I gives (in parentheses) numbers which correspond to the reference numbers preceding the titles below, from which the cases respectively were taken.

1. Bailey, Pearce and Jelliffe, Smith Ely. Tumors of the Pineal Body, with an account of the pineal syndrome, the report of a case of teratoma of the pineal and abstracts of all previously recorded cases of pineal tumors. Arch. Int. Med., 1911, 8, 851–880.
   Gives one original case, together with three others presenting puberty praecox. Discussion of pineal disorders.
2. Baldwin, Bird T. Physical Growth of Children from Birth to Maturity. (Book published as Univ. of Iowa studies in child welfare, vol. 1, no. 1, June 1, 1921.)
   Norms for height and weight of children.
3. Bulloch, William and Sequeira, James H. On the Relation of the Suprarenal Capsules to the Sexual Organs. Path. Soc. London, 1905, 56, 189–208.
   One original case with eleven others presenting suprarenal tumors with precocious physical development.
4. Frankl-Hochwart, L. v. Über Diagnose der Zirbeldrüsentumoren. Deutsche Ztschr. f. Nerv., 1909, 37, 455–464.
   Gives one original case with fairly complete details. One illustration which shows precocious development of genitals.
5. Glynn, Ernest E. The Adrenal Cortex, Its Rests and Tumors; Its relation to other ductless glands, and especially to sex. Quart. J. Med., 1911–12, 5, 157–192.
   Presentation of five cases not found elsewhere in this bibliography, together with several case reviews mentioned under other references. Discussion of adrenal disorders. Extensive bibliography.
6. Gordon, Murray B. Disorders of the Internal Secretions in Children. New York Med. J., 1921, 239–243.
   Discussion of thyroid and thymus disorders. Treatment of the growth and sexual changes accompanying pineal tumors, etc., in children. No case studies.
7. Guthrie, Leonard, and Emery, d'Este. Precocious Obesity, Premature Sexual and Physical Development, and Hirsuties in Relation to Hypernephroma and Other Morbid Conditions. Clin. Soc. Trans., 1907, 40, 175–202.
   Presents three original cases together with five others. Two illustrations show the obese development of two of the cases, and a third shows the precocious sexual development of another case.
8. Harris, Rowland H. Carcinomatous Ovarian Teratoma with Premature Puberty and Precocious Somatic Development. Surg., Gynec. Obst. Chicago, 1917, 24, 604–611.
   Gives one original case history. Two illustrations show patient before operation, a third after the tumor was removed. There is a roentgenogram of the tumor and numerous photographs and microphotographs of the tumor tissue.
9. Harvey, W. G. A Case of Precocious Sexual Development. (Preliminary Report.) Irish J. Med. Sc., 1922–23, 5 ser., 550–551.
   A brief case history.
10. Herzog, W. Ein Fall von Allgemeiner Beharrung mit heterolager Pubertas praecox bei dreijährigen Mädchen. München. med. Wchnschr., 1915, 62, 6.
    Presentation of an original case with three photographs of patient: one ventral, one dorsal, and one of the perineal region.
11. Hutchison, Robert and Wauhope, Gladys. A Case of Precocious Puberty. Brit. J. Child. Dis., 1924, 21, 57–61.
    Original case report with extensive X-ray examination. Three illustrations. Shows the general development and radiogram of carpus of patient contrasted with carpus of a normal child of same age.

[1] We wish to thank Mr. C. A. Kulmann for assistance in abstracting the German references.

12. Johan, Bèla. Frühe Pubertas verusacht durch corpus pineall Tumor, mit Veränderungen anderer innersecretorischer Drüsen. Neurol. u. Psychiat., 1922–23, 31, 276–277.
Brief original case report.

13. Johnson, Raymond. Report of Royal Medical and Chirurgical Society. Brit. Med. J., 1907, 1, 1183.
Very brief reference to boy with great muscular development and early hirsuties.

14. Krabbe, Knud H. Early Synostosis of the Epiphyses with Dwarfism in Pubertas Precox. Endocrinology, 1919, 3, 459–466.
Briefly reviews six case studies which use X-ray examination and presents one original case. One illustration shows precocious physical development of patient, one X-ray of humerus and ulna, another of hand and wrist.

15. Krabbe, Knud H. The Pineal Gland, especially in relation to its supposed significance in sexual development. Endocrinology, 1923, 7, 379–414.
Discussion of the pineal gland from pathological, clinical, and experimental viewpoints.

16. Leiner, Joshua H. Pubertas Praecox With Special Reference to Mentality. Endocrinology, 1920, 4, 369–380.
Discussion of the mental and physical characteristics of the various endocrine types of puberty praecox. One of the best references on mental development. Gives review of many case studies of puberty praecox, with an organization of the references by endocrine types.

17. Lipschutz, Alexander. The Internal Secretions of the Sex Glands. The problem of the puberty gland. Chap. X, 431–438. (Book published by Williams and Wilkins Co., Baltimore, 1924.)
Discussion from endocrine basis. Presents in detail one new case together with several others. Gives an illustration contrasting patient with normal boy of same age. Another photograph shows an X-ray picture of the hand of a girl of thirteen and a half with sexual precocity.

18. Lopez, A. Case of Remarkable Precocity in a Male. Am. J. Med. Sc. (Phila.), 1843, 31, 500.
Case study, giving detailed physical measurements.

19. Lord, John R. The Pineal Gland: its normal structure; some general remarks on its pathology; a case of syphilitic enlargement. Tr. Path. Soc., London, 1899, 50, 18–21.
Brings knowledge of pathology of the pineal gland up to date. (1899.)

20. Lucas, R. Clement. Tumor of the Right Ovary in a Child aged seven years associated with Precocious Puberty: Ovariotomy; Cure. Tr. Clin. Soc., London, 1888, 21, 224–228.
Presentation of ovarian tumor case.

21. McCord, Carey Pratt. The Pineal Gland in Relation to Somatic, Sexual and Mental Development. J. Am. Med. Assoc., 1914, 63, 232–235.
Discussion of effect of tumors upon the pineal gland. Experimental study on pineal deficiency in animals.

22. Modern, Fred S. and Reed, Grendon F. Case of Pluriglandular Dyscrasia. Endocrinology, 1925, 9, 61–69.
Very complete report on case study.

23. Morse, John Lovett. A Case of Abnormal Physical and Sexual Development in an Infant of Two Years, probably due to a Tumor of the Pineal Gland. Arch. Pediat., 1913, 30, 179–191.
Very complete presentation of a new case together with review of several outstanding similar cases. Many roentgenographs of different bone centers, forearm, shoulder, knee, etc., show the degree of ossification. A photograph shows the patient's precocious sexual development.

24. Noyes, F. B. Textbook of Dental Histology and Embryology. (Book published by Lea and Febiger, Phila. and N. Y., 1912.)
Gives norms for dentition of children.

25. Ogle, Cyril. (1) Sarcoma of Pineal Body, with Diffused Melanotic Sarcoma of the Surface Cerebrum. (2) Tumor of Pineal Body in a Boy. Tr. Path. Soc., London, 1899, 50, 4–12.
Two case reports; second deals with symptoms of precocious sexual development. Discussion of pineal body.

26. Ogle, John W. Unusually Large Mass of Carcinomatous Deposit in One of the Suprarenal Capsules of a Child. Tr. Path. Soc., London, 1864–65, 16, 250–252.
Case report.

27. Pitman, H. A. General Melasma and Short Hair Over the Entire Body of a Child of Three Years with Conversion of the Left Suprarenal Capsule Into a Large Malignant Tumor; the external organs of generation resembling those of adult life. Lancet (London), 1865, I, 175.
Presentation and discussion of case.

28. Plumb, P. E. Precocious Menstruation. A Unique Case. N. Y. Med. J., 1897, 65, 768–769.
Report of case.

29. Reuben, Mark S. and Manning, G. Randolph. Precocious Puberty. Arch. Pediat., 1922, 39, 769–785. Article continued in Arch. Pediat., 1923, 40, 27.
Discussion of puberty praecox from etiological point of view. Mental development treated. Second volume gives ten case studies. Photographs of two of the cases show overdevelopment of the body, attributed to pineal tumor.

30. Robinson, R. H. Rep. Soc. Study Dis. Child., 1902, 2, 232.
Paragraph which tells of three members of one family presenting precocious sexual development.

31. Sachs, Ferdinand. Hypergenitalismus durch Nebennierentumor. Arch. f. Kinderh., 1924, 74, 151–157.
Report of case of suprarenal tumor. Photograph shows abnormal sexual development of child.

32. Sequeira, James H. A Case of Sarcoma of the Left Suprarenal Body in a Girl of Eleven Who Presented the Phenomena of Precocious Puberty. Rep. Soc. Study Dis. Child., 1902, 2, 226.
The case reported here is covered in the reference under Bulloch and Sequeira.

33. Siegel, Alvin E. Influence of the Adrenals and Ovaries Upon Precocious Secondary Sexual Development. Arch. Pediat., 1924, 41, 265–272.
Presentation of two case studies, one a suprarenal tumor, the other an ovarian tumor.

34. Stone, Robert King. Extraordinary Precocity in the Development of the Male Sexual Organs and Muscular System in a Child Four Years Old. Am. J. Med. Sc. (Phila.), 1852, 24, 561–564.
Report very interesting although very old. Report of physical development very detailed.

35. Strauch, August. Sexual Precocity in the Male. Am. J. Dis. Child., 1918, 15, 132–140.
Discussion on the mental aspect. Presentation of several cases with one original case diagnosed as primary hypergenitalism. Photograph of patient.

36. Thoms, Herbert and Hershman, A. A. A Case of Sexual Precocity. Am. J. Obst. Gynec., 1923, 6, 349–350.
Report of very complete case history. Precocity attributed to hypersecretion of the ovary. Excellent illustration of patient.

37. Tierney, J. L. Pubertas Praecox. Med. Clin. No. Am., 1922, 6, 31–60.
Etiological discussion of puberty praecox. Review of early history. Excellent tabular summary of differential signs attributed to the different glandular disorders. Mental development is given considerable attention. Presentation of four original cases with eleven illustrations which show physical development and X-rays of bone development.

38. Weigeldt. Puberty Praecox. München med. Wchnschr., 1921, 68, 220.
Report of ovarian tumor case.

39. Wells, George. A Remarkable Case of Early and Continued Menstruation. Maryland Med. J., 1902, 45, 440.
Short report of case. No diagnosis attempted.

40. Wheelon, Homer. Precocious Menstruation: Observations on Two Cases of Pubertas Precox. Endocrinology, 1925, 9, 353–371.
Discussion of the incidence of puberty precox among females, including etiological factors and mental development. Presentation of two original cases.

41. White, Anthony. Historical Account of Philip Howorth, a boy in whom signs of puberty commenced at an early age. Med. Chir. Tr. (London), 1809–11, 1, 276–288.

A case much quoted by more recent writers. Gives case history with a short discussion of earlier cases of puberty praecox.

42. Williams, Roger. Precocious Sexual Development, with Abstracts of Over One Hundred Authentic Cases. Brit. Gynec. J., 1902, 18, 85–114.
Extensive discussion of precocious sexual development in children; relation of sexual desire and mental development. Presentation of abstracts of 104 case histories with complete bibliography.

43. Woods, T. An Extraordinary Case of Early Puberty in a Boy. Lancet (London), 1882, ii, 377.
Presentation of case. Diagnosis not attempted.

44. Ziehen. Fall von Gigantismus. Berlin. Klin. Wchnschr., 1906, 43, second half, 1198–1199.
Complete report of case study, presented before clinic.

A QUANTITATIVE INVESTIGATION OF THE ALLEGED INDEPENDENT OPERATION OF CONSCIOUS AND SUBCONSCIOUS PROCESSES[1]

By RAMONA MESSERSCHMIDT
UNIVERSITY OF WISCONSIN

I. INTRODUCTION

REASONING from certain experiments conducted by Janet, Prince and Burnett, it has been thought by many that it is possible for a person to carry on two complicated intellectual processes simultaneously, one consciously and the other subconsciously. Janet[2] conducted a series of experiments in which he endeavored to penetrate the subconscious. He instructed one of his subjects to make "an unconscious multiplication and an unconscious judgment" by post-hypnotic suggestion. According to instruction, Lucy correctly multiplied 739 by 42 with her right hand on a paper that was before her, and at the same time related the happenings of the day. Later she wrote a letter by automatic writing while engaged in conversation. Freely translated, it reads:

"Madam,

I cannot come Sunday as it was understood; I beg you to excuse me. I would like to come to you, but I cannot accept for that day.

Your friend,
Lucy.

P. S. My regards to the children, please."

The following year Dr. Morton Prince[3] published a description of a series of experiments designed to demonstrate the exist-

[1] The writer wishes to express her gratitude to Professor Clark L. Hull for suggesting the nature and the technique of this experiment, and for his assistance in the preparation of the manuscript. This is the third of a series of Wisconsin studies on hypnotic phenomena, but the first to be published.

The terms conscious and subconscious are used throughout this article to denote the difference respectively between the acts done when the subject was fully aware of the procedure, and those acts done when the subject was *not* fully aware of the procedure. Awareness, or lack of it, is understood merely as the ability or inability of the subject to tell whether or not the process in question was going on or had recently gone on.

[2] Dr. Pierre Janet, L'Automatisme Psychologique, Paris, 1907, pp. 263–264.

[3] Dr. Morton Price, "Experiments to Determine Co-conscious (Subconscious) Ideation," *Journal of Abnormal Psychology*, Vol. 3 1909–9, p. 37.

ence of co-consciousness. Two abnormal individuals were his subjects. The following is a representative example of the method used. For one subject he used BA, a case of multiple personality. A had a complete amnesia for B, but B was aware of A. The hypnotic state of B was designated as b. It was agreed with b, when co-conscious, she should do a particular sum in mental arithmetic while A was consciously engaged in another task.

"A was brought and the number 53 written, without her knowledge, in the left-hand upper corner of a sheet of paper—and 61 in the lower right-hand corner. A was then directed to write in the middle of the sheet the verse 'Tell Me Not in Mournful Numbers', etc. I distracted her mind as a conjurer might, so that she would not, apparently, as a fact did not, examine the paper.

* * * * *

"Once only she stumbled a bit while writing, as if there was a momentary inhibition of her thoughts by the subconscious process.

"She was then changed to b. Immediately on appearing, b exclaimed, almost shouted '114', which is correct." [4]

Using substantially the same technique as Dr. Prince, Mr. Charles T. Burnett [5] of Bowdoin College carried out a series of experiments to prove the existence of co-consciousness in three normal individuals.

Burnett divides his experiments into three groups: (1) the probative experiments (thirteen sessions); (2) confirmatory experiments (five sessions); (3) check experiments (nine sessions). The first group are the ones which he mainly bases his thesis upon. The following is a description of one of the best of this series:

"Hypnotic stage:

"O (the subject) was told in hypnosis that E (the experimenter) would give him a problem in the addition of three numbers, that he would awake on hearing the third number, and that he would give the answer at once on being rehypnotized. After a repetition of these directions, the numbers were given as follows: 27, 97, 82. O awakened at once as directed.

"Interim stage:

"Being set at automatic writing he produced the following. In this reproduction, and in all similar cases hereafter, the vertical

[4] Prince, op. cit. p. 37.

[5] Charles T. Burnett, "Splitting the Mind," Psychological Monographs, Vol. 34, No. 2, 1925.

lines indicate ends of lines in the original manuscript, and the dots the illegible parts.

"'Was to (here follows a rude, five-pointed star and an irregular crescent-shaped figure)[6] add 3 nur 3 numbers | and nd give the | answer when rehy | hy (p) notised me they were | the probl | (There is a large indecipherable conglomerate traced faintly around the preceding words. A new sheet begins here.) If you really wanted me to do it | I can do it but if you | don't I (c) an't. If you would | let me I would . . . why | . . . | why (A new sheet begins here) 97, 27, 82. You said to give you the | answer I can't t tell | you because I know you don't want (these last two words are superposed) me too | want | I want to do it, but I . . . If | But I can do it.'

"E meanwhile talked undisturbedly with O on various subjects irrelevant to the experiment. Questioned about his right hand, O was not aware that it was doing anything. Being questioned as to what occurred in hypnotic stage, 1, O recalled everything except the specific character of the problem.

"Hypnotic stage 2:

"After a brief pause O said 206 (correct).

"E: 'Why did you say that?' O: 'Because you wanted me to give the sum of some numbers.'

"E: 'How did you get the numbers?' O: 'You gave them to me.'

"E: 'When did you do this sum?' O: 'At the table.'

"E: 'When were you doing the problem?' O: 'When we were talking.'"[7]

From the probative and the confirmatory experiments, Burnett concluded that there was "co-consciousness illustrated as existing in certain normal individuals".[8] From the check experiments, he concluded that in the waking state and with no post-hypnotic suggestion "O's ability to perform two widely divergent tasks at the same time was far inferior to what he can do outside hypnosis with the aid of a previous hypnotic suggestion",[9] "the functions were not simultaneous",[10] there was an alternation of task, and they interfere as shown by the errors and scanty recall."[11] In hypnosis,

[6] All matter in ( ) inserted into the automatic record by the experimenter.
[7] Burnett, pp. 17–18.
[8] Ibid, p. 129.
[9] Ibid, p. 119.
[10] Burnett, p. 120.
[11] Burnett, p. 121.

however, there was "no evidence of mutual interference between the tasks—interfere but not alternate".[12]

Janet drew no conclusions from his experimentation which are open to adverse criticism. The technique employed by the last two experimenters, however, lacked scientific controls, and made no provisions for a *measurement* of results on which to base their conclusions.

Burnett states that the processes alternated in the normal condition, but that when one was done consciously and the other subconsciously by post-hypnotic suggestion, they took place simultaneously. Considering the method used by both these investigators, there was a great possibility for alternation with the latter as well as the former, because under the loose conditions of the experiment it would be impossible to tell whether alternation took place or not. To be more specific, writing the memorized verse in Prince's experiment probably did not require either full or continuous effort, thus leaving an opportunity for carrying on the computation. There was evidently some interference even in their experiments, for "she stumbled a bit while writing". This might have been while the computation was being performed, thus showing it to be an alternate and not a simultaneous process. While conversing, it would easily have been possible for the subject, while apparently listening, to carry out the calculation. In Burnett's experiment, it is also most logical to assume that the problem was computed during pauses in the conversation. Since the mind was not completely occupied during the interim stage—that is, since there were times when the intellectual process was not actively engaged in formulating ideas, it is possible, and even probable, that the addition was made during such intervals.

But how complete was the simultaneity of the operations? What was the degree of interference? This is the real question at issue. The degree of interference could have been obtained by measuring the efficiency of each operation when performed alone, and then making comparisons with a similar measure of the efficiency of the processes when performed together, providing the following controls were adhered to:

(1) Uniform conditions as regards fatigue and practice.
(2) Constant time intervals.
(3) Constant laboratory conditions.
(4) Ignorance of the subjects as to the actual purpose and

[12] Burnett, p. 124.

working of the experiment and unawareness of the subconscious process at the time of the performance.

(5) *All experimental activities of the subjects must be maintained at the maximum efficiency* possible under the conditions, to reduce to the minimum the possibility of undetected alternations.

The comparison of the efficiency of a given process under the two conditions should form the basis for judging the amount of interference, if any. If the two activities are found to go on simultaneously without any interference whatever, they may be supposed to constitute distinct intellectual processes, and to be truly co-conscious. On the other hand, the amount of interference, if any, will be assumed to represent a lack of separation or discreteness of the two processes.

II. METHODS AND PROCEDURE IN THE MAIN INVESTIGATION

The purpose of this experimental study is to determine whether it is possible for a normal individual to carry on two complicated intellectual processes simultaneously as evidenced by the quantitative results of controlled tests.

An essential feature of the experiment was to keep the mind of the subject maximally engaged during the testing periods. To discover the degree of simultaneity of the operation, it is necessary to compare the results obtained when only *one* complicated intellectual task was being performed at the maximum speed, with the results obtained when *two* complicated intellectual tasks were being performed, both at the maximum speed. Obviously, if two independent tasks can be performed at the same time, a total of twice as much should be accomplished in a given period as when the mind was occupied with only one. If this takes place, it will constitute strong evidence of genuine co-conscious mental activity. If, however, a total is accomplished *less* than when the mind was occupied with only one task, it will be strong evidence against the theory of co-consciousness.

In the majority of our experiments one task was carried on subconsciously (mental computations recorded automatically on paper with the hand in question under a screen) through the influence of post-hypnotic suggestion. Owing to the widespread prejudice against hypnosis, it was found somewhat difficult to obtain many good subjects. Thirty undergraduate women were "worked on", eight of whom became well trained subjects. Nevertheless, yielding to false fears, five of these declined to continue the experiment.

Therefore, the results are based on an experimental study with three well-trained individuals of average computational ability. A subject was considered satisfactory only when she showed a total amnesia of her trance experiences as tested by simple recall.

The method of hypnotizing employed during the training of subjects was what one might call a combination of physical and psychical methods—that is, eye fixation on a crystal together with verbal suggestion. When the eyelids closed heavily, stroking and continual verbal suggestions of drowsiness, bodily heaviness, and muscular relaxation, deep and regular breathing, and a final vivid verbal picture of sleep were given. This caused the subjects to fall into a deep trance state. After becoming trained, it was no longer necessary to use the crystal; a few suggestions of sleep were sufficient to induce deep hypnosis, with total post-hypnotic amnesia, as tested by ordinary recall.

The three subjects used are designated as X, Y, and Z. X was a freshman aged nineteen enrolled in the College of Agriculture against her wishes, for she possessed exceptional ability in the literary field. She ranked far above the average according to the results of the university intelligence test. Y was a sophomore aged twenty-one, majoring in English. She was an average student. Z was a senior aged twenty, majoring in history. She was an excellent student. A very interesting fact to note about Z is that she could be easily "scared" into a dissociated condition. The hypnotist had only to look at her and shout, "sleep", whereupon she immediately fell into a trance state.

Serial addition and reading were chosen for the respective tasks in the present investigation. For the reading, the book, Edman's *Human Traits*, was used because of the uniformity of material throughout, making it a good medium for measurement. Serial addition is extremely difficult, and requires full concentration. It is performed as follows: To the number given by the experimenter, the subject added orally first six, then seven to this sum and eight to the next sum, then six, then seven, then eight, and so on, for five minutes. The computation was done "mentally", for merely the sums were given aloud. Only two-place numbers were given in the subject's responses—that is, on reaching the hundreds she was allowed to drop the third digit. Thus, if a subject were given the number 13 for the serial addition of 6–7–8, her responses would be as follows:

13
19

26
34
40
47
55
61
68
76
82
89
97
103
10
18 and so on.

A training series was given each subject to eliminate as far as possible a high percentage of error and the worst part of the practice effects. Due to the number of mistakes and to the difficulty of remembering which number was to be added, two subjects were trained with 6–8 and 7–9 instead of 6–7–8 and 7–8–9 respectively. This series was also too difficult to keep straight, so it was necessary to use 6 and 7. One of these last subjects, however, became proficient enough to use the series with two numbers for her last four tests. These were so distributed as to produce no constant error.

It was necessary to devise two types of procedure, the main experimental procedure and the control experimental procedure. By comparing the results of the two, an accurate measure of the amount of interference was possible. One procedure was, in brief, to measure the amount accomplished in a given time *doing one task alone* at maximum speed and the other procedure was a measure of the amount accomplished in each of the two tasks during the same length of time, *doing them together*. In order to make the details of the technique clear, a typical experimental cycle is given in Table I, and a set of typical results from such a cycle in Tables II and III.

It should be noted that the general plan of the experiment was quite simple. The single processes in part I (Table I) were designed to determine the subject's maximum conscious capacity with each of the three tasks employed in the control experiments where no interference existed. Ideally, it would also have been desirable for a similar control to have been run to determine the maximum *subsconcious* capacity of each subject parallel with single

TABLE I

I. CONTROL EXPERIMENT—Single Tasks, Conscious
- A. Serial Addition: 6-7-8 Oral—Time = five minutes, adding as rapidly as possible.
- B. Reading Edman's *Human Traits:* Oral—Time = five minutes, reading as rapidly as possible.
- C. Serial Addition: 7-8-9 Written—Time = five minutes, adding as rapidly as possible.

II. MAIN EXPERIMENT—Double Tasks, One conscious and the other subconscious.
- A. Reading Aloud and Written Addition:
  - (1) Reading Edman's *Human Traits*—Oral (Conscious).
  - (2) Serial Addition: 7-8-9 Written (Subconscious)—Time = five minutes. Both done as rapidly as possible.
- B. Serial Addition: Oral and Written Together:
  - (1) Serial Addition: 6-7-8 Oral (Conscious).
  - (2) Serial Addition: 7-8-9 Written (Subconscious)—Time = five minutes. Both done as rapidly as possible.

task, I, C. This was contained in the original plan of the experiment but was not performed because of an oversight on the part of the writer.

Experiment II, A was designed to discover how much mutual interference, if any, took place between a conscious and a subconscious process when the two were to a considerable extent different. Experiment II, B was designed to determine how much mutual interference, if any, took place between a conscious and subconscious process when both were practically identical. The amount of interference may be determined quantitatively by noting how much less, if any, the subject accomplishes on a given task when she performs it while another task is being performed by the alleged secondary consciousness.

TYPICAL EXPERIMENTAL RESULTS

Specific and representative examples of the data procured are shown in Control Experiment (7) and Main Experiment (10) of Subject X:

TABLE II

Results: TYPICAL CONTROL EXPERIMENT—Single Tasks, Conscious

I. A. Serial Addition: 6-7-8 starting with 24, Oral, Time = five minutes.

Number of additions	128
Number of errors	1
Number of times lost count	1
Correct additions	127

B. Reading Edman's *Human Traits:* Oral—Time = five minutes.

Read	820 words

C. Serial Addition: 7-8-9 starting with 34 Written—Time = five minutes.

Number of additions	109
Number of errors	4
Correct additions	105

TABLE III

Results: TYPICAL MAIN EXPERIMENT—Double Tasks, One Conscious, the Other Subconscious

II. A. Reading Aloud and Written Addition, Together—Time = five minutes.
(1) Reading Edman's *Human Traits:* Oral (Conscious).
Read . . . . . 393 words
(2) Serial Addition: 7-8-9 starting with 34 Written (Subconscious).
Number of additions 26
Number of errors . . . . . 4 (and 2 repetitions)
Correct additions 22
B. Serial Addition both Written and Oral—Time = five minutes.
(1) Series 6-7-8 starting with 24 Oral (Conscious).
Number of additions 49
Number of errors 2
Correct additions 47
(2) Series 7-8-9 starting with 37 Written (Subconscious).
Number of additions 18
Number of errors . . . . . 7 (and 1 repetition)
Correct additions 11

Experiment 7

March 25, 1926, 12:30 P.M.

Directions:

While in the trance state, X was told that *on waking* she should sit at the table, put her hand under the cardboard screen, take up the pencil, and maintain this position throughout the series.

She was directed to carry out three tests. The first was to give orally as quickly and accurately as possible the serial addition of 6–7–8 to the number repeated just before the word "ready". She was to continue until she heard the word "stop". The second test was to begin at the place designated as soon as she heard "ready" and read aloud as rapidly as possible from the book Edman's *Human Traits* until told to stop. For the third she was told to start at the top of the paper under the cardboard and to write in columns the serial addition of 7–8–9 to the number repeated just before the word "ready". On reaching the bottom of the page, she was to commence again at the top just a bit to the right of the last column and to continue until she heard the word "stop".

X was then asked to repeat the directions to insure a complete understanding of the nature of the task.

General Observation on Behavior During This Experiment:

For the serial addition, X rested her head on her left hand and closed her eyes, apparently to concentrate better. She said that she liked this test better than those taken previously because she did not feel a bit tired. In fact, she felt fine, and said that she must be getting better in addition. This, however, was due to post-

hypnotic suggestion. She had been told in a previous trance state that the tests would not be tiring, and that she would feel fine after taking them.

Experiment 10

May 29, 1926, 12:30 P.M.

Directions:

In the trance state, X was told that *after waking* she should sit at the table, place her right hand under the cardboard screen, take up the pencil, and on hearing the word "ready" to start at the top of the paper (under the screen) and to write in columns the serial addition of 7–8–9 to the number given her. It was explained that her subconscious mind would guide her right hand, and that when awake she would not realize that she was writing. At the same time, she was to begin at the place designated and read aloud as rapidly as possible from the book, Edman's *Human Traits* until told to stop. It was explained to her that her conscious mind would read aloud and that, since the subconscious guided one operation while the conscious guided the other, there would be no interference between the two. Therefore, it should be possible to get a high rate both of reading and addition.

For the second test, it was explained to her that her subconscious mind would again guide her right hand to write automatically the serial addition of 7–8–9 to the number given her. At the same time, her conscious mind would give the serial addition of 6–7–8 to the number given her just before she heard the word "ready". Since there should be no interference between the two processes, she should make a very good record. Again, she was told that she would not realize she was doing the automatic writing while awake.

General Observation on Behavior During This Experiment:

A. Reading and Writing Together:

X hesitated just a bit before starting to read. During her reading she frequently said, "um". In fact, she repeated this expression thirty-one times. Also, she repeated many phrases and pronounced some of the words incorrectly, something she had never done before. Instead of alternating in long stretches—first reading, then adding, then reading, etc., as she had done with the Conscious Together experiments,[1] she read more slowly, mispronounced words, and twisted phrases while writing down a total. Then she resumed her reading and stumbled again, almost stopped.

when writing the next total. Evidently the alternations were shorter when done post-hypnotically. Just after reading one of the first additions and stumbling badly in her reading, X exclaimed, "Boy, I'm rotten!" When it seemed especially difficult for her to read, she would stamp her right foot and knit her brows. This is another evidence of interference. Toward the end of the period she said, "I can't even read", and bent lower toward the book as if to see better. Just these exclamations and the way in which she behaved during the testing period are sufficient evidence of a high degree of interference.

B. Both Oral and Written Additions:

As in the previous test, X said "um" frequently. After the third addition (oral) she said, "I can't think". On the seventh, she rationalized by saying, "Guess I'm out of practice". There were frequent repetitions both in the written and oral additions—an evidence of confusion due to interference. During the pauses between the oral additions she made the required additions on paper, an evidence of alternation. Near the end of the test she said, "Funny I can't think as fast as I usually do". She realized that something was holding her back, but she did not quite know what it was.

C. Later Observations:

On finishing, X looked up and said in a rather disgusted tone, "Isn't that dumb?" Later she rationalized, "I need glasses".

"Why?"

"Because I couldn't read." Then she added, "I surely am crazy. Do you know, I wanted to add, instead of read". This last comment is a sure proof of a high degree of interference—that is, the two processes were not carried on separately, but were more or less merged, and then hindered each other. Later she excused herself by saying, "I'm all out of practice".

The numbers written were much smaller and more imperfectly formed than usual—as if to conserve on the energy used to make them.

III. RESULTS OF THE MAIN INVESTIGATION

For every main experiment the amount accomplished of each of the two tasks when done together was compared with the amount accomplished for each task when done singly as measured by the corresponding Control Experiment. Table IV shows in detail the results from which the comparisons were made.

TABLE IV

RESULTS WHILE PERFORMING CONSCIOUS AND SUBCONSCIOUS TASKS TOGETHER WITH PARALLEL CONTROL TESTS:

	I. CONTROL EXPERIMENT					II. MAIN EXPERIMENT					
								Dissimilar Tasks Performed Together. Time 5 M.		Similar Tasks Performed Together. Time 5 M.	
Subject	No. of Experiment	Date and time of taking tests	No. of correct additions adding consc. orally 6-7-8 Time 5 Min.	No. of words read consc. orally Time 5 Min.	No. of corr. additions 7-8-9 consc. written Time 5 Min.	No. of Experiment	Date and time of taking tests	No. of words read consc. orally	No. of correct additions 7-8-9 subconsciously written	No. of corr. additions 6-7-8 consc. orally	No. of correct additions 7-8-9 subconsciously written
X	7	12:30 P.M. March 25	153	820	127	10	12:30 P.M. May 29	393	22	47	11
	8	March 26	156	1075	140	11	May 30	413	32	52	13
	9	March 29	160	1140	143	12	May 31	421	33	54	21
		Average	156 1-3	1011 2-3	136 2-3		Average	409	29	51	15
Y	1	1 P. M. May 11	108	1171	155	2	1 P.M. May 12	605	154	58	55
	3	May 22	136	1057	270	4	May 24	640	102	52	35
	5	May 26	204	1014	252	6	May 29	497	0	122	0
		Average	149 1-3	1080 2-3	225 2-3		Average	580 2-3	85 1-3	77 1-3	36
Z	1	3:30 P.M. May 22	199	1340	125	2	3:30 P.M. May 24	1045	25	108	3
	3	May 25	175	1100	147	4	May 26	1085	10	57	75
	5	May 27	194	1462	117	6	May 28	938	33	39	8
	7	May 31	99	1138	97	8	June 1	967	25	15	7
	9	June 2	89	1187	85	10	June 3	811	35	14	9
		Average.	151 1-5	1241 2-5	114 1-5		Average	969 1-5	25 3-5	46 3-5	20 2-5

The most striking fact revealed by an examination of Table IV is that there is an enormous amount of mutual interference when the attempt is made to have a conscious and a subconscious process operate simultaneously in the same organism. In the case of subject X, the number of words read drops from 1,012 to 409, and the number of correct additions from 156 to 51. The first process is only 40 per cent as efficient, and the second is only 33 per cent efficient. This means that there not only is an interference such as would be produced by an alternation, but considerably more. If the time were equally divided between the two processes with no other interference, we might expect each to have accomplished 50 per cent as much as when operating singly. But not even this is accomplished.

The interpretation of these data is somewhat hampered by the fact that we do not know the normal rate of subconscious written addition when uncomplicated by a vigorous conscious activity. As pointed out above, a control series for determining this was included in the original plan of the investigator but through a misunderstanding this was not run. If we assume that the rate of subconscious written addition would not differ materially from the same activity performed consciously, then it fell from 137 addition to 29 when complicated by oral reading, and to only 15 when complicated by conscious addition of a very similar nature. In the first case, it is only 22 per cent efficient, and in the second case only 11 per cent efficient.

Similar percentage efficiencies summarizing the results of the other subjects have been computed. They are shown in Table V, together with final averages. It appears from this table that conscious reading and subconscious adding average respectively 57 per cent and 27 per cent efficient, when the attempt is made to

TABLE V

Subject	Efficiency of Each of Two Dissimilar Tasks Performed Together			Efficiency of Each of Two Similar Tasks Performed Together			Mean Percentage of Total Accomplishment Together to Tasks Singly
	Words Read	Correct written additions	Average	Correct oral additions	Correct written additions	Average	
X	40.4%	21.2%	30.80%	32.6%	10.9%	21.75%	26.27%
Y	53.7%	37.8%	45.75%	51.1%	13.2%	32.15%	38.95%
Z	77.8%	22.0%	49.90%	30.8%	17.8%	24.30%	37.10%
Average	57.3%	27.0%	42.15%	38.2%	14.0%	26.07%	

perform them simultaneously. On the other hand, conscious addition and subconscious addition average, respectively, 38 per cent and 14 per cent efficient when the attempt is made to perform them simultaneously.

Several conclusions may be drawn from Table V. The most striking is, as observed above, that there is an enormous amount of interference of a conscious process by a subconscious process attempting to operate simultaneously with it. Secondly, it may be observed that the interference is much greater when the subconscious process is almost identical with the conscious process than when it is rather different. Where the processes are rather different, the conscious activity is 57.3 per cent efficient, but where they are similar it is only 38.2 per cent efficient, a fall of 30 per cent. Similarly, the subconscious process drops from 27 per cent efficiency to 14 per cent, a fall of almost 50 per cent. This seems to indicate that the keener the competition between a conscious and a subconscious process the subconscious process suffers the greater proportionate loss.

In order to compare the efficiency while doing two tasks together when one was subconscious and the other conscious, with the efficiency of doing them together when both were conscious, a set of experiments was conducted with subject X. Otherwise, the same procedures were used as for the experiments with post-hypnotic

TABLE VI

RESULTS OF SUBJECT X WHILE PERFORMING TWO TASKS TOGETHER, BOTH OF WHICH WERE DONE CONSCIOUSLY, WITH PARALLEL CONTROL TESTS.

I. CONTROL EXPERIMENT					II. MAIN EXPERIMENT					
							Dissimilar Tasks Performed Together. Time—5 Min.		Similar Tasks Performed Together. Time—5 Min.	
No. of Experiment	Date 12:30 P.M.	No. of correct additions adding 6-7-8 orally Time 5 Min.	No. of words read orally Time 5 Min.	No. of correct additions 7-8-9 written Time 5 Min.	No. of Experiment	Date 12:30 P.M.	No. of words read orally	No. of correct additions 7-8-9 written	No. of correct additions 6-7-8 orally	No. of correct additions 7-8-9 written
1	Mar. 12	105	1134	105	4	Mar. 22	473	55	63	46
2	Mar. 15	114	1066	111	5	Mar. 24	612	71	87	48
3	Mar. 17	159	1273	149	6	Mar. 26	456	73	82	42
	Average	126	1157.6	121.6		Average	513.6	66.3	77.3	45.3
Per Cent of Normal Efficiency							44.4%	54.5%	61.3%	37.2%
Average Efficiency of both activities								49.4%		49.2%

suggestion. Table VI gives the detailed results of this investigation. It is interesting to observe that this subject differs quite markedly in her behavior where both processes are conscious from herself where one was conscious and the other subconscious. There is interference, to be sure, in fact exactly what would result from spending half of the time on one and half on the other. There are too few data, however, to warrant any very general conclusions.

Of one thing, however, there is no doubt. Complex conscious and subconscious processes do not go on independently. The subconscious process slows down the conscious process and very probably the conscious process slows down the subconscious one. Unfortunately, the latter point is not proved by our data owing to the error in not running control series of subconscious written additions.

As a matter of fact, there was gross evidence of interference quite apart from the quantitative results cited above, and with all the subjects. While attempting to perform two tasks simultaneously, one of which was subconscious, the subjects would read, say, quite normally for a short time, then pause briefly saying nothing for a second or so, then read incoherently and slowly, mispronouncing words, etc., which would be followed by the writing down automatically of a sum beneath the cardboard screen, then reading again quite normally for a short time, and so on. The same type of behavior also took place when both processes were addition. Similar observations were made on subject X when both processes were conscious. The chief difference seemed to be that this subject alternated much more frequently when one process was subconscious than when both were conscious.

IV. SUPPLEMENTARY CONTROL EXPERIMENT

Because of the difference in data secured by Janet, Prince and Burnett from the results of the main experiment performed in this investigation, the question arose: Would the results obtained from our subjects have been identical with those obtained from the subjects used by the investigators just mentioned if we had employed the same technique as they? If so, there arises a considerable presumption that the differences found are not due to the different subjects employed, and that if those investigators had used the controlled technique employed in the present investigation, they, in turn, would have obtained results similar to our own. Unfortunately, it was impossible to work further with X and Y. However, a number of experiments adhering rigidly to

the procedure of Janet, Prince, and Burnett as summarized in the introduction to the present article were performed with subject Z, to determine whether her behavior would coincide with that reported by those authors. The results were found to be identical with those of the corresponding experiments reported by the investigators in question. It accordingly becomes increasingly likely that if their tasks had been run at top speed with adequate controls and the responses measured, their results would have coincided with those of the present investigation, with a corresponding modification of their conclusion regarding the hypothetical entity or process called the "co-conscious".

THE GROUP DEMONSTRATION OF ILLUSORY WARMTH AS ILLUSTRATIVE OF THE PHENOMENON OF SUGGESTION

By W. T. HERON

IN AN endeavor to find a method whereby the phenomenon of suggestion could be demonstrated to classes in the elementary psychology laboratory, we found that we could modify and amplify Seashore's [1] warmth apparatus in such a way that it could be used with a group of subjects.

The wiring of the apparatus is shown in Figure 1. An inspection of this diagram will show that there are two complete circuits, each of which will operate independently of the other. One circuit is composed of switch (S1), the small resistance coils (B), the switch (S2), light bulb (L2), and a variable amount of rheostat (R). The other is composed of switch (S1), the light bulb (L1), and the reciprocal amount of rheostat (R) to that contained in the first mentioned circuit.

The rheostat (R) and the light bulb (L1) are mounted on the outside of a box in such a way that they are plainly visible to the audience. This rheostat is of the common tubular sort to the slider of which is attached a pointer. This pointer moves along a scale which is divided into six equal parts. The more elaborate this control box is made to appear the more it will serve to impress the students, and thus to render them more suggestible.

The light bulb (L2) and the switch (S2) are placed inside of the box in such a way that the latter is easily reached by the instructor and the former easily seen. The switch must be absolutely noiseless in operation. The light bulb serves to regulate the amount of current passing through the resistance coils (B), and also indicates whether the current is passing through the circuit when the switch (S2) is closed.

Each of the resistance coils (B) is made by winding 25 turns of wire from an ordinary 110 volt 1.2 amp. rheostat on a round wooden peg about one-half inch in diameter. We used 28 of these so that 28 students could be given the demonstration simultaneously. Each coil is mounted on a small wooden base at each end

[1] Seashore, C. E. Measurements of Illusions and Hallucinations in Normal Life. Studies from Yale Psychology Laboratory, 1895, II, 1–67.

of which is fastened a binding post. The ends of the resistance wire are fastened, one to each of the binding posts.

The other piece of apparatus necessary is a Whipple stop-clock. If this is not available, any timing apparatus may be used which has a large enough second hand that its position may be easily read by everyone in the group of subjects.

The subjects are seated in such a way that all may see the two pieces of apparatus, *i.e.*, the clock and the control box. Each one is given one of the resistance coils, and all the coils are then connected in series with the control apparatus as shown in the diagram.

The rest of the procedure of the experiment is indicated by the instructions which are read to the subjects as follows:

> This is a test of your ability to perceive warmth. I will determine the threshold of your warmth perception, *i.e.*, just how warm does an object have to become before you perceive that it is warm. You see that I have here a rheostat to which is attached a pointer which slides along this scale. When it is at zero, and I snap on this switch (indicate S1) the current goes through this light bulb (indicate L1), and causes it to burn very brightly. As I move the slider up the scale, the current is gradually drawn away from the light and goes through the coils before you. (Demonstrate so that the students can see how the light grows dim.) It will warm them slightly because they are made of German silver wire and offer some resistance to the current. The current will pass, however, for several seconds before the warmth is perceptible.
>
> Your procedure in the experiment is as follows: When I give the signal "ready", grasp the coil between the thumb and forefinger of the right hand like this (illustrate). Then when this clock points to 60, I will switch on the current, and set the rheostat at 1 on the scale. I will leave it there for 10 seconds, and then move it to 2. It will remain there for 10 seconds, and then be moved to 3 and so on.
>
> Watch very carefully, and as soon as you feel warmth remove your fingers, and note the time on the clock. Record this and the setting of the rheostat. This will be trial No. 1. As soon as all have felt the warmth, we will turn off the current and wait for the coils to cool. We will then repeat the procedure for trial No. 2. We will do this for 10 trials.
>
> When you have perceived the warmth and recorded the results, *do not replace* your fingers on the coils as that would fatigue your sense organs. Wait until all have finished and the next trial begins.

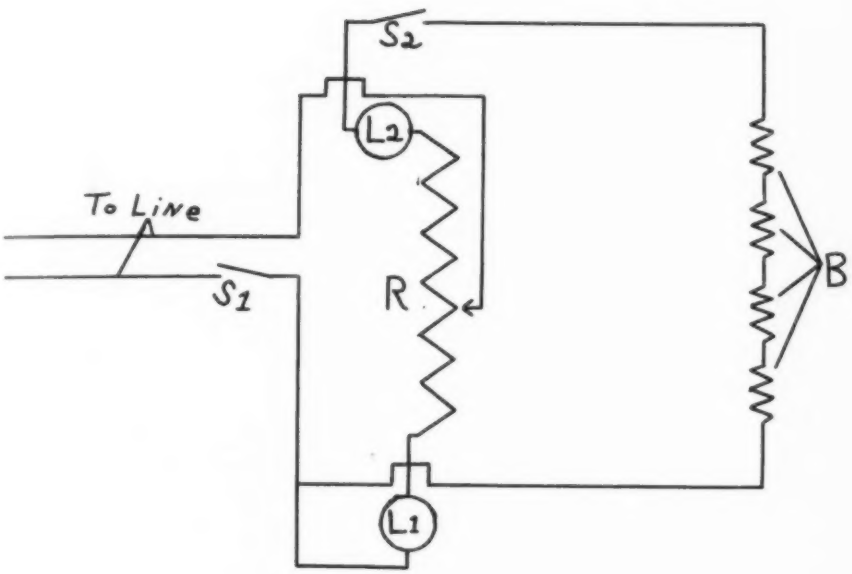

Figure 1

The following instructions are for the instructor only:

For the first five trials give objective warmth from the start (*i.e.*, keep switch S2 closed). In each succeeding trial start with switch (S2) open. If every subject has not reported warmth (as evidenced by the fact that he has not removed his fingers) at the end of 50 seconds (at which time the rheostat will be set at 6) close the switch (S2) and give objective warmth. The data will show how many times each student resists the suggestion by the fact that his recorded time is over 50 seconds.

Some typical results show that on the average women (22 subjects) accept the suggestion in 8.1 trials out of 10. An average of the records of 32 men shows an acceptance of the suggestion in 6.9 trials out of a possible 10. The average for both men and women (54 cases) is 7.4. These data are based on ten trials per person in which there was a possibility of suggestion. That is, the procedure was carried out as indicated in the above instructions except that it was done with both hands instead of only one. There was very little difference in the results for the two hands.

The frequency distribution of these data is shown in Table 1. As indicated in this table, a large majority of the subjects show a high degree of suggestibility as instanced by the illusion of warmth.

TABLE 1

FREQUENCY DISTRIBUTION OF ACCEPTANCE OF SUGGESTION BASED ON 54 SUBJECTS

No. of acceptances from a possible 10	No. of individuals		
	Women	Men	Total
0	0	3	3
1	2	3	5
2	0	0	0
3	1	0	1
4	0	5	5
5	1	1	2
6	1	0	1
7	1	1	2
8	1	1	2
9	2	3	5
10	13	15	28
Totals	22	32	54

Some of the factors causing a high degree of suggestibility are strikingly illustrated in this demonstration. A few of these may be pointed out:

1. Prestige. The instructor is a person of prestige in the mind of the average sophomore, and what he says and does has, for that

reason, great suggestive influence. To successfully conduct this demonstration, therefore, the instructor must make the fullest possible use, in word and deed, of the influence which his position gives him. He must be particularly careful to test the coils for warmth between trials even though there may have been no current passing through them in the preceding trial.

2. Ignorance. The average sophomore is vastly ignorant of the fundamentals of electricity. The behavior of the electrical current with reference to a comparatively simple piece of apparatus such as a rheostat is a great mystery to him. As a result, he is very gullible with regard to an explanation of the action of a current in any piece of apparatus, and is easily awed by an apparently complex bit of machinery. This particular kind of ignorance on his part renders him an easy prey in this experiment. In a like manner does ignorance of other matters cause people to become the easy victims of medical quacks, for example, who are capable of using high sounding phrases and long medical terms.

3. Sex. The results of this demonstration have consistently shown women to be more suggestible than men. This is consistent with common observation in everyday life. We cannot now enter into a discussion of the ultimate reason for this.

4. Social pressure. The average individual hates to make himself conspicuous by deviating in his behavior from that of the majority. In this demonstration the group should be arranged, if possible, in the form of a semi-circle. When this is done the students who retain their grasp of the coils become the objects of observation on the part of those who have removed their fingers. For the majority of individuals this sort of observation becomes almost unbearable in a very short time, and they become possessed with a great desire to feel the warmth so that they may remove their fingers. This, of course, greatly increases the ease with which they succumb to the illusion.

This experiment was so uniform successful whenever tried with the elementary laboratory classes at the University of Kansas that it is published with the hope that others will be able to use it with advantage. The students were so impressed with it as a demonstration of a very important and frequent phenomenon of human nature that they readily forgave the instructor for the slight prevarication necessarily inserted in the instructions. They realize that some purpose for the experiment must be given in order that their attitude toward it may remain uncritical.

NOTES AND CORRESPONDENCE

(1) *The Wittenberg Symposium on Feelings and Emotion.*

All members of the American Psychological Association are especially invited to attend the Symposium on Feelings and Emotion to be held at Wittenberg College, October 20–23, under the honorary chairmanship of Dr. Cattell.

This conference marks the opening of the new laboratory of psychology under the direction of Professor Martin L. Reymert. The list of contributors among the American psychologists includes Professors Cannon, McDougall, Dunlap, Jastrow, Pillsbury, Seashore, Langfeld, Weiss, Howard, Hoisington, Prince, Bentley, Carr, Washburn, Woodworth, Hollingworth, Stratton, Koffka, Gault, and Brett. The contributors among the European psychologists include Professors Pieron and Janet of Paris, Adler of Vienna, Spearman of London and Claparede of Geneva besides representatives from several other European countries.

Any person interested in attending the conference should communicate with Professor Martin L. Reymert, Wittenberg College, Springfield, Ohio.

(2) *New School for Social Research.*

According to the recent announcement by Dr. Alvin Johnson, Director of the new School for Social Research at 465 West 23d Street, New York City, an exceptionally valuable program of lectures by medical men is to be offered for the current year.

One of the most important new courses, which began the week of September 26, will be a course of lectures on "Recent Progress in Medicine and Surgery". A partial list of the lecturers in this course includes: Dr. Simon Flexner of the Rockefeller Institute, Dr. Walter B. Cannon of Harvard, Dr. Lewellys Barker of Johns Hopkins, Dr. Francis Carter Wood of Columbia, Dr. Charles B. Chapin of Providence, and Dr. Lewis I. Dublin of the Metropolitan Life Insurance Company. Lecture topics for the series include: Endocrine Glands, Problems of Nutrition, Tissue Culture and Physiology, Vital Statistics, Insurance and Life Extension, Industrial Diseases, Immunity, Epidemiology, The Problems of Nervous Diseases, The Cancer Problem, The Problem of Heart Diseases.

REVIEWS

SIGMUND FREUD: Collected Papers, vol. III; Case Histories, Authorized Translation by Alix and James Strachey. London: Hogarth Press, 1925. Pp. 607. 30s.

Only five cases are analyzed in this large volume, but each case is described with such a wealth of detail that to call these histories "papers" is to adopt a too modest generic term for the contents of the volume.

The cases treated are those of (a) hysteria, (b) phobia, (c) obsessional neurosis, (d) paranoia, and (e) infantile neurosis. All of these analyses have appeared originally in the years 1905–1918, but in the present edition there are many illuminating footnotes and postscripts.

Freud's writings are too well-known to require being summarized in a review of this sort. If we do not appreciate many of his conclusions as science, we still derive benefit from his elaborate presentation of the data. In this he is indeed a master. Like the realist or, better, naturalist in fiction, he crowds into his picture objects that no one but an analyst would think of regarding as relevant. But again, if we do not take Freud's explanations seriously, we may yet enjoy the long drawn out narrative as *belles-lettres*. It reminds us of the four-fold method with which the sacred writings were wont to be interpreted among the Jews—the so-called P a R D e S (Paradise) being the initials of the words which stand for the *literal*, the *symbolic*, the *homiletical* and the *hermeneutic* interpretations of the passages.

That Freud knows human nature is undeniable. Some of his casual *aperçus*, such as "for a reproach which misses the mark gives no lasting offense", to my mind, are worth more than a dozen pages of dream juggling, and sometimes (especially in the analysis of Dora's hysteria) the *dénouement* as revealed by the author, is just as plausible or *vraisemblant* without the labored evidence as with it. In this regard, Freud comes close to his great race-fellow, Spinoza, whose method did not establish the truth of his views but added to our admiration of his genius. In these papers, Freud tried to be more critical to his interpretations than in his later writings. His analysis of "a case of hysteria", especially, contains the kernel of his whole method. Freud has put much of his personality even into the description of cases. He argues, he pleads, he apologizes—withal there is a certain power behind these digressions.

Does he convince? Well, perhaps in the same way as Plato-Socrates convinces by his dialectics. We are ready to accept the conclusions for their ingenuity, their artistry, but the logical test is not met. Freud's scientific integrity is to be noted in this respect. He does not tell us that Dora was cured. She discontinued the treatment just as she was about to be made well.

Her resistance got the better of her. How then does the analyst know that his method was sound? Apparently the admissions on the part of the patient as well as the consistency between the physician's expectations and the details brought out in the anamneses are to serve as the evidence for the soundness of the method.

Nearly 150 pages are devoted to the analysis of a phobia in a five-year-old boy, and what astonishes us is that this child would answer every one of the hundreds of questions put to him with such relevance and directness as comparatively few adults could be credited with. Truly to elicit a response each time, in a continued grilling, required a great deal of skill on the part of the questioner (who was by the way the child's father, and not Freud) and a superabundance of patience and intelligence on the part of the youngster.

Another boy is said to have been less critical in religious matters in later years than at the age of five. When one has such prodigies to work with, what marvelous things could psychoanalysis not accomplish!

Enough has been said, or perhaps rather omitted, to indicate that the volume under discussion is interesting and important rather from its sociological and psychological phases than from the therapeutic angle. It is the sidelights that fascinate us. Freud's *obiter dicta* are more instructive than his symbolism manipulations.

Furthermore, unexpectedly we sometimes stumble upon a revelation, *e.g.*, when in a postscript Freud tells us that the five-year-old subject of the analysis, fourteen years later, did not remember anything about the long-drawn out analysis even after reading it in print. This undoubtedly is a point scored in favor of the psychoanalytic theory about the repression of early childhood experiences.

The complimentary references to Jung and to Adler in the text are almost always modified by footnotes in which these leaders of schism are taken down a peg, *e.g.*, by such a clause as "Adler, who was once an analyst".

The translation has ben done exceptionally well, except for an occasional slip such as "who was 18 months younger than me". The use of the word "woken" as a past particle of the verb "wake" ("He will be woken up by a dream") does not sound euphonic, even if there is some precedent for it.

A. A. Roback.

How to Study in College. By Leal A. Headley. Henry Holt and Company, 1926. Pp. vii+417.

It has been claimed for the writings of Rousseau that they serve as a yeast cake on the intellectual life of his time. It would not do for the book under review to have a similar effect on the *heads* of too many college students, but in the opinion of the reviewer, it will serve somewhat as a cat-'o-nine-tails on the pachydermous spirit of some.

The book is expressed in diction lucid, strong and serious; it is thought provoking on a more or less elusive and shifty subject of modern education

suggesting by its excellence that pearls have been used to decorate a sponge or that diamonds have been set in sandstone.

Every one of the fourteen chapters will make ample returns for rereading despite inequalities of excellence. For the sake of emphasis attention is, here, called to the last chapter first: How To Invest Time. "We shall not be concerned with saving time. Literally time cannot be saved. The books are closed each day." "The heaviest responsibility" of a student is the judicious management of his time. Youth excites our wonder by his daring recklessness in spending his time, his strength and his money (if he has it). He acts as if life does not begin in earnest until college days the past. "We are reminded that youth is the period of achievement." The author recites a host of immortal achievements made by men and women while still in the twenties. "This is conspiciously true in the realm of science where, if anywhere, time and painstaking efforts are required . . . the men destined to highest eminence in science usually produce some work worthy of their best powers at a decidedly *early* period in their career." One reason why youth squanders time is his failure to appreciate it. One of the best ways to cultivate appreciation is to *survey and check one's personal expenditures of time.* "Simply to keep a record of how time is spent would be a vain exercise. A survey is futile except as it becomes the basis for a program." A suggestive table, p. 382, shows how an effective survey of time expenditure may be provided by the student and used as a trusty guide.

Chapter I, without a dull sentence, discusses the ancient topic, How To Keep Fit Physically. The value of this chapter for the student rises and falls with his seriousness, his achievements and his aims. This is well illustrated by the author's treatment of *when to eat.* Those who have shouldered much and are making "the valiant fight" will find it useful, but it will very likely prove to be dull reading for the college idler gripped by his irregular street cafe habits.

Chapter II, How To Keep Fit Mentally, is a decided contribution to mental hygiene. In the popular mind, including that of the campus, the effect of hard work is regarded as the leading cause of mental breakdown of one kind or another. To an earnest and interested student hard work is a bracer, a saving tonic. "It is a fact, absurd as it may seem to some of my readers, that one chief trouble with the college student of to-day is his lack of enough work to occupy his mind. He is distracted but he is not occupied." And much of his mental instability is traceable to his distraction for which he is hardly responsible. The worried and distracted condition is quite illogical for, if work cannot turn the trick, worrying is of no avail.

Other topics of the chapter are, "objectify centers of interests", "set goals", "control emotional states", "recognize limitations". On the first of these topics the author says: "It is germane to our observations that we note the universal student usage in referring to social events and athletic sports as the '*college activities*'. The all too plain implication is that their studies are *passivities.*"

The chapters on How To Understand, How To Learn, and How To Remember humanize in excellent form what psychology has to offer on these problems. The author has selected, arranged and unified in a coherent form in these chapters the best to be found in the writings of James, Watt, Meumann, Burnham, Thorndike, Book and Gates.

The chapters, How To Judge, and How To Reason, will appear useful to all teachers and students who have not been spoiled by much learning.

The chapters on How To Read and on How To Use The Library are done in such lucid style that they make splendid woof for the book, and will prove instructive to the general reader.

The chapter, How To Make Notes, comes close to where the student works and lives. The ever rising flood of lecture giving as a means of imparting knowledge makes the present discussion of the subject of decided worth. The distinction between note taking and note making, by no means pedantic, furnishes the key to the treatment of the subject. Notes that are made stand as the product of the note maker's own thinking. If, in making a set of notes, you have not developed opinions which you feel are in some degree your very own, your undertaking has been a failure. The chapter contains tables, figures and a sample entry of note making.

Chapter XIII, How To Meet An Examination, not only makes plain how one may successfully meet that reputed school ordeal but produces convincing reasons why one should do so. There is gradually forming in some American schools the soft and deceptive custom of exempting students of the last or highest class in the school from final examinations. The author takes the position that the examination is a part of the academic routine and that as such it combines three functions. *It measures progress. It induces work. It makes for organization of knowledge.* These three functions are described at length. The author discusses the problem of writing an examination under sixteen points. No doubt students would produce better papers with less nervous exhaustion, if some such instruction were given to students prior to final examinations.

Skidmore College. LINUS W. KLINE.

AN INTRODUCTION TO SOCIAL PSYCHOLOGY. By L. L. Bernard. Henry Holt and Company, X, 651.

In general there are two schools of social psychologists. One school in its effort to make intelligible social behavior stresses the needs, purposes, and the desires of the individual, and attempts to show how these give rise to social behavior and the socialized individual. The other stresses the environment and attempts to show how the individual is moulded by it. By the former the individual is thought of as selecting those things in the environment that will be useful in attaining satisfaction, or as creating those things that will minister to his needs or provide satisfaction. By the latter the environment is regarded as playing the selective rôle. From the many possibilities presented by the organism, regarded as almost passive, environment is thought to select those which are to be realized by stimulat-

ing some and by repressing others. It should be unnecessary to add that both schools recognize the importance both of the inherited nature of the organism and of the environment, but they differ greatly in the explanatory value attached to these determinants of behavior.

Bernard is an environmentalist. But his frequent use in the book review of such drives as the desire for new experience, the desire for social approval, the desire for distinction, the desire to be like others, the striving for development, and the pugnacious, sexual and gregarious impulses brings him as it has recently other environmentalists, very close to the purposive psychology so vigorously championed by McDougall. It should be added, however, that Bernard is more interested in trying to show why a given desire finds the expression it does than in showing the presence of certain fundamental drives in various types of social behavior.

In his Introduction to Social Psychology Bernard has given us the most comprehensive social psychology known to the reviewer. The book is divided into four parts. Part I, or the introduction, is devoted to defining the nature of the study to be made. This is done by constructing on the basis of a critical examination of the various definitions offered by leading social psychologists a definition of his own, and by relating social psychology to the other social sciences. In part II the foundations of collective behavior are described. Beginning with a study of the organic bases of behavior, the author carries us through a study of environmental influences which includes an interesting classification of environments, a study of the development of behavior patterns, of the nature and place of consciousness in behavior, of race differences, of the influence of nationality and class, ending with a study of personality. Part III describes the influence of the social environment and its manner of operation. In this section interesting studies of suggestion and imitation are made. In part IV the influence of the psychosocial environment on collective behavior is described. This part begins with a classification of groups. A study is then made of leadership. The book ends with a study of the various types of social control. Of great excellence is his account of fads and of the people who adopt them.

Of all the topics treated that of race impresses the reviewer as being the least satisfactory. In spite of the fact that numerous investigators have reported striking differences between whites and blacks and in spite of the widespread opinion, supported by much evidence, that these differences increase with age up to maturity, Bernard advances on the basis of a very questionable interpretation of Pyle's investigation of white and negro children, reported in Nature and Development of Learning Capacity, the thesis that race differences decrease with age when the races are given similar environments. The basis of this thesis was the investigation of Pyle which showed that negro children of fifteen made a better showing when compared with white children of fifteen than negro children of ten did with white children of ten. The probable effect of greater selection of negro children in the advanced grades, Bernard dismisses with a very inadequate explanation. Nor does he try to bring Pyle's result in line with the findings of other investigators. Yet this could easily have been done

by subjecting Pyle's work to a careful analysis. The gain of the negro children on the white children was almost wholly in two tests, the substitution test and the rote memory test. Naturally school experience influences achievement in the substitution test, and rote memory has never been regarded as indicating a high order of ability. The gain of the negro children in the other two tests, the manthanometer and logical memory was very slight. Indeed on the manthanometer the fifteen-year-old negro children did not do so well as the ten-year-old negro children when compared with white children of corresponding ages. In the logical memory test the fifteen-year-old negro children were able to do 83 per cent as well as fifteen-year-old white children, while negro children of ten were able to do 77 per cent as well as ten-year-old white children. This indicates a slight improvement in the negro children. The few cases, however, which Pyle used should caution one against attaching any great importance to this slight difference. Certainly the investigation of Pyle cannot be used to justify one in advancing a thesis so different from that supported by the findings of numerous investigators.

Furthermore Bernard's treatment of race as an abstraction is very unsatisfactory, as is his whole treatment of abstractions in general. At times he seems to use the term abstraction as synonymous with the unreal. At other times he characterizes things to which he attaches great importance, such as *intelligence* and *species* as abstraction. Frequently he seems to confuse the complex with the abstract. One sometimes wonders if Bernard does not regard a chemical compound as an abstraction since it is composed of simpler elements.

In this book the author gives, as he himself states, a synthetic account of personality and of social behavior. In so doing he succeeds admirably in setting forth the various phases of human nature and of the environment as they enter into the life of the developing individual. Well-suited as this treatment is for many purposes it seems to lead to an atomistic view of human nature and to the neglect of the organism as an agent. This tendency is very noticeable in Bernard's treatment of the will (167) and in his treatment of thinking (149) in which he attributes to intelligence no creative rôle. His synthetic treatment is also possibly responsible for his confusing concomitant variation with the relation of cause and effect in chapter V, and his neglect of development through maturation in chapter XVIII.

As stated above this is one of the most comprehensive studies of social psychology we have. The author anticipated that some readers would think it too inclusive. The reviewer must confess that he is of that opinion. A great deal of the material given in part II, interesting as it may be, seems to him irrelevant, and the fact that the author himself did not use it in elucidating the problems of social behavior confirms him in that opinion. The size of the book and its organization would probably have been improved if parts III and IV had followed part I, and part II had been reserved for the last. In this way the more concrete social phenomena would have been presented and the transition to a study of the underlying

bases and explanations of these would have been natural. At the same time a guide to the relevant and important would have been provided.

An outstanding exception to all the criticisms here made is Bernard's treatment of the pathological forms of consciousness. In this study Bernard comes under the influence of abnormal psychology, and is led to show how the individual *seeks* in various ways to gain satisfaction. The purposive view of behavior is here clearly presented. If the author had been more influenced by this view of behavior, the reviewer feels the book would have been greatly improved, for whenever Bernard treats man as purposive his results are excellent.

Notwithstanding the criticisms here made of the book under consideration, the book appeals to the reviewer as one of the best books we have on social psychology. While the teacher may find it advisable to omit parts and change the order of presentation, no student of social psychology can afford to remain unacquainted with it.

CHARLES C. JOSEY.

LES MÉCHANISMES SUBCONSCIENTS. By Georges Dwelshauvers. Paris: Libraire Félix Alcan, 1925. Pp. 145.

Human nature may be studied from different angles. One may investigate the physiological functions of the human body and the coördinating mechanisms of these functions. On the other hand, one may investigate the nature of the explicitly conscious experiences of man from the entirely mental viewpoint. But the human individual is not only the seat of application of biological laws, on one hand, and of the laws determining the interplay of his ideas and conscious volitions per se, on the other. Between the actions pure of his organs and his conscious reflection and striving, there is a vast mass of vague and confused impressions, tendencies, mental images, volitions and emotions, that, although hazily, or not at all, recognized by him, may determine the very course of his existence. They are expressive of the interaction between mental and organic life and offer a complicated picture that is of particular interest psychologically. This vast domain, that one has been accustomed to speak of as the unconscious or subconscious, has been given an interesting treatment in the book to be reviewed, a treatment based largely on definite laboratory experiments concerning what the author calls the "image", a concept that he finds to have a very wide significance. These experiments have been carried out in the psychological laboratory of Barcelona, during the years 1921–1924, under the direction of the author of the book, M. Georges Dwelshauvers, director of this laboratory. The discussion of the researches is divided up into seven chapters, each dealing with experiments of a particular type and inferences based on them. To these seven chapters is added a special "conclusion", summarizing and evaluating the results.

Chapters I to V, entitled as follows: "L'image mental provoquée, Le questionnaire sur l'image mental, L'attitude musculaire et l'image mentale, Le réflexe graphique et l'image mental and Les éléments inconscients dans

la fixation de l'image", deal with experiments, devised to determine what may be called subconscious in the mental image, and what is the relation to consciousness of the processes underlying images. The results and the inferences based on them may be summarized as follows: In case we think attentively of something and our thinking follows the laws of logical reasoning, that is, carries a purpose that we are well conscious of, the mental activity seems to be primarily a rational "synthesis"; the image is reduced to a minimum; the thought is, above all, of organizing units. If, on the other hand, the attention is somewhat relaxed and the mind thus becomes open to foreign suggestion, the consciousness is invaded by images that tend to impose themselves more and more, disturbing the concentrated thought and dissociating the synthesis. We submit to these images as we do to suggestions. The images do not obey our will, but seem to appear spontaneously and are liable to sidetrack any logical trend of thought. They do not depend on processes initiated by external sensory impressions only; but very often they originate in muscular attitudes and in organic reactions that in themselves remain unperceived. They are, in short, "subconscious in their formation and in their avatars". The subconscious is a coral-like colony ("polypier") of images. In the subconscious sphere the images are not representations of anything, they belong to the organic mechanisms. They are a plastic intermediate between the organism and the explicitly conscious and purposefully willed; they are the form in which the functional units of motor reactions make it possible for our consciousness to be aware of the organism, and the reverse; they furnish our consciousness with the possible means of letting the organism into action. The muscular reactions may translate themselves into images. On the other hand, the images may support the consciously willed movement and, according to their degree of precision, serve as a means of its execution. The images are the psychological manifestations of a regulating physiological mechanism. The dependence of their occurrence in consciousness, as images, on a weakening of directed attention and purposive thinking or acting is again illuminated by dreams and daydreams. In the state of sleep the synthetic mental activity is absent, instead the organic reactions express themselves in an intense play of images. The sequence of these is determined by laws that are neither the ones of association of ideas nor the ones of mechanical causation. The combination and interplay of images defy any logical principles, and follow forms of their own, concerning which we know nothing.

All images are not of the same importance. The experiments dealt with in the first three chapters of M. Dwelshauvers' monograph indicate that there exist between them a division of tasks of labor. The visual images are the most intellectualized, that is if we voluntarily leave ourselves open to the occurrence of images, it is in the form of visual images that the function of organic coördination with most ease expresses itself in consciousness. Then comes the auditory images, which however, at least in normal cases, seem to be less stable, more elusive than the visual. The tactile-muscular mechanisms play a different rôle from the mechanisms

which produce visual and auditory images. They very rarely translate themselves into images. They enter, on the other hand, always as an integrated part in our mental syntheses, and give the vague feeling of continued activity and of an inner sequence.

Chapters VI and VII of M. Dwelshauvers' monograph deal with a series of experiments on the image as a synergetic organization of motor dispositions. In this character the image is not perceptible to the individual as a representation of an object but manifests itself entirely in coördinated automatic behavior, automatism. These two chapters are entitled: Les contradictions de l'image et du mouvement and L'automatisme psychologique. A summary of the results of these investigations and inferences made from them may be as follows: The image, as an intermediate between consciousness and the organism, is also the subconscious principle of the organization in automatism, but here the process takes the form of a functional connection, of a synergetic organization of motor dispositions. It is this rôle of organizer of the image that explains latent action. When we are learning some or other Aufgabe there are intervals when the mind is not consciously occupied by the task in hand. During these intervals, however, the brain is not at rest. Connections continue to be formed and organized. This is due to the image that continues to work, not in the form of perceptual representation, but solely in the form of functional correlation. For this practice is necessary; the correlations form themselves gradually. The experiments discussed in chapter VII show that functional automatism is less in children than in adults. Among adults it is most perfected in intelligent individuals.

The establishment of automatic function is thus the inner work of the image, or, to express the matter more precisely, the inner work of the multiform process, that appears to us as a colony of images, when it imposes itself upon our consciousness, and that is essentially a very rich sensory motor system of connections, an ensemble of coördinated movements, ready to enter into play whenever called for by the sense impressions that have given birth to them. These sense impressions may be external just as they may arise from tactilomuscular or physiochemical reactions or from the organic rhythms. But the automatism is never perfect enough to obey exactly voluntary innervation, even with help of the regulating intermediate of the image. This intermediate is only vaguely in the awareness during conscious will. The experiments discussed in chapter VI demonstrate plainly this fact. M. Dwelshauvers summarizes the view to which his investigations had led him concerning the rôle of the subconscious and the image for human conduct in the following statements that I give, as close as I can, in his own words:

"The vast material that comes from the sense impressions unifies itself in our thought by the function of mental synthesis; inversely, the transition of volition into multiple movements, serving its execution, is a successive and spatial unrolling of the synthetic unit. The double exchange of which we notice by observation only the drawing to a head (l'aboutissement),—idea on one side and executed action on the other,—includes

essential factors that escape, at least partly, our consciousness. In studying experimentally the image, the execution of motor command and the automatism, we believe we have discovered among such factors the existence in the nervous system of a mechanism of regulation and coördination that, from the psychological point of view, is nothing but the image itself, and the seat of which seems to be in the ensemble of the associative paths that connect the nervous centres. This mechanism appears to be like an automatic mediator between the thinking individual and the bodily sphere."

It is impossible to give in a short review, even with approximate adequacy, an account of the different experiments M. Dwelshauvers presents to us in his book, their method and technique. May it however be said again that the view of the subconscious, laid down by the author in his concluding chapter, and given in abstract above, is based not on speculations related to clinical observations, as the majority of the theories of the subconscious, but on highly controlled laboratory experiments, dealing often with very simple and consequently fairly easily interpretable phenomena. A considerable part of the credit due to the author is for having shown us that such experimental approach to the problems of the subconscious can be profitably applied, and that beams of light may be thrown into the mystical dark-chamber of the unconscious mind by exact scientific procedure.

HELGE LUNDHOLM.

McLean Hospital, Waverley, Mass.

THE ABILITIES OF MAN: THEIR NATURE AND MEASUREMENT. By G. Spearman, Ph.D. (Leipzig), F.R.S., Grote Professor of Philosophy of Mind at the University of London, Foreign Member Société Française de Psychologie, New York: The Macmillan Co., 1927. Pp. xxxiii+315. Price, $4.50.

This is one of the books and articles published occasionally and conceived more or less in the spirit of Herbart, whom technical students of philosophy will recall as the well-meaning man who presumed to mix up psychology and mathematics in an almost paranoidal way. As if the nine thousand millions of neurones more or less of the human organism and the appreciable and unappreciable elements of the stream of mind had mathematical relationship! or as if abilities had, either!

It is largely a study of *intelligence-correlations*. "The start of the whole inquiry was a curios observation made in the correlations calculated between the measurements of different abilities (scores for tests, marks for school-subjects, or estimates made on general impression). These correlations were noticed to tend towards a peculiar arrangement, which could be expressed in a definite mathematical formula", the tetrad equation, and the value constituting the left side of it the tetrad difference. "There has been shown to exist a very remarkable bearing indeed. It is to the effect that, whenever the tetrad equation holds throughout any table of correlations, and *only* when it does so, then every individual measurement of every

ability (or of any other variable that enters into the table) can be divided into two independent parts which possess the following momentous [*sic*] properties. The one part has been called the general factor and denoted by the letter g; it is so named because, although varying freely from individual to individual, it remains the same for any one individual in respect of all the correlated abilities. The second part has been called the 'specific factor' and denoted by the letter s. It not only varies from individual to individual, but even for any one individual from each ability to another." Max=rag. Gw+ras. Sqx. "Here *Max* is the measurement or other value obtained for any individual, x in the variable a; Gw is the individual's amount of *Sa*, the factor specific to the variable a. Here at once we have before us the essence of the whole doctrine, the seedling from which all else has sprung."

One sees how totally misleading is the title of this book; it should have been mathematical speculations on the correlations of human abilities or something like that; the sales might have been fewer but on the other hand people looking for real, descriptive information would not have been fooled.

The table of contents will close our notice of this book—one cannot call it any sort of a "review". "Part I: The Rival Doctrines. 1, The problem; 2, monarchic doctrine: 'intelligence'; 3, oligarchic doctrine: formal activities; 4, oligarchic doctrine: types; 5, anarchic doctrine: 'general level', 'average', or 'sample'; 6, eclectic doctrine: two factors; 7, proposed explanations of G; 8, universal mental competition; 9, hypothesis of mental energy. Part II: The Fundamental Facts. 10, Proof that G and S exist; 11, universality of G; 12, amount of G in different kinds of education; 13, 'special abilities' and 'group factors'; 14, goodness and speed of response; 15, law of span; 16, law of retentivity of dispositions; 17, law of inertia 'perseveration'; 18, law of fatigue; 19, oscillations in efficiency; 20, laws of conation, W and C; 21, influence of age; 22, influence of heredity and sex; 23, mind and body; 24, cardinal conclusions." Appendix and an index.

"In this way", the book proper concludes, "it is hoped, a step has been achieved towards supplying psychology with a genuinely scientific foundation." And so Herbart thought of philosophy more or less. Is it wholly due to the reviewer's ignorance that he remains just a wee bit skeptical as to the intimate and minute relation of things biological and psychical to one of man's obsessing inventions, mathematics?

At any rate, if one keeps his general stheneuphoric index reasonably high, even such an obsession of science as this cannot make him despair; for so runs the world away. But only a few of the habitual readers of the JOURNAL, for example, would find in this learned treatise much more than an interesting instance of 1927 scholasticism.

GEORGE VAN NESS DEARBORN.

U. S. Veterans' Hospital, New York.

THE SPRINGS OF HUMAN ACTION: A Psychological Study of the Sources, Mechanism, and Principles of Motivation in Human Behavior. By Mehran K. Thomson, Ph.D., Professor of Philosophy and Psychology in Baker University. New York and London: D. Appleton & Co., 1927. Pp. xvi+501. Price, $3.00.

This important book is intended primarily by the author as a "text in the new field of motivation", and so far as the reviewer knows really is the first treatise "to provide a complete and consistent survey of what modern psychology has revealed concerning the nature and operation of all the widely divergent factors that move to conduct. Motivation is here established as a completely new science, to which the author makes significant and authoritative contributions of his own." These claims of the advertisement appear to be not exaggerated; it is the pioneer text-book on the subject, at least in the English language, and as such has an importance of its own.

The complete table of contents of Professor Thomson's volume is as follows: preface; introduction; the urge of physical activity; autonomic acts and reflexive responses; habits as motives; emotions as motives; feeling as motive; ideas as motives: ideo-motives; interest as motive; will, choice, personality as motives; self-regarding motives; prejudice as motive; motives as preparatory reactions; acquired and substitute motives; negative motives; motives of the subconcious mind; motives of autosuggestion; motives of group suggestion; social motives; love as motive; values as motives; economic motives; morale as motive; aesthetic motives; interaction of motives; bibliography; and a good index. This somewhat unliterary rehearsal shows concisely the very wide and inclusive range of Doctor Thomson's work, and when we can add that throughout there is a thorough saneness of judgment and a catholicity of interest and of appreciation, one has said not a little in favor of any treatise on psychology. It "points out the compound motives synthetically as well as the elementary drives analytically", and proceeds from the simple to the complex, from the more strictly mechanical to the relatively more psychical, and from the personal to the comparatively more social phases of human motivation. Yet the author realizes and stresses the trite but indispensable axiom, sometimes forgot by the narrow researcher, that always motives are concerned with "a personality, an integrated selfhood, the total man". (Crass materialistic behaviorism, for example, unpsychological, could not get half the notice it now and then manages to get did it not entirely ignore this ancient rule of common sense and of science.)

"One man kills another and receives a medal; another man slays a fellow creature and is hanged. What makes the difference? *Motives.* . . . The first task of economics, sociology, jurisprudence, ethics, philanthropy, in fine all the social sciences should be a thorough and systematic study of motivation, . . . and yet this is precisely the field most neglected." The author obviously might have added that the same situation obtains in the commonest of personal relations of every-day life:—Mr.

Smith, for example, a kindly and intelligent, and well meaning, man, is continually annoyed (and perhaps finally one morning runs in somewhere and buys a divorce?) largely because good Mrs. Smith, lacking chiefly in motive psychology, continually misconstrues the motives of her lord and master; naturally he gets tired of her habit of trying to make the better appear the worser reason, (Sophistry reversed). And so it goes everywhere nearly always. Many have complained of this common lack of insight not only among their human environments, but in the psychologic doctrine so far developed; William McDougall has stressed it; E. B. Barrett (see the bibliography of this book) is one the very few who have made a serious effort to get the matter into scientific form for professional and then finally for popular absorption into the working wisdom guiding our lives.

This extremely well-written and laborious and scholarly treatise of Professor Thomson makes much more than a beginning toward the satisfaction of this psychologic lack. He and the world at large, both of them, are to be congratulated on a book as well-balanced, timely and useful as it is interesting; it takes its place as a work that no student of psychology, amateur or professional, may well neglect.

GEORGE VAN NESS DEARBORN.

U. S. Veterans' Hospital, New York.

A STUDY OF NATIO-RACIAL MENTAL DIFFERENCES. By Nathaniel D. Mttron Hirsch, Research Fellow in Psychology, National Research Council, Worcester, Massachusetts: Clark University, 1926. Pp. 175. Price, paper, $3.00, cloth, $3.50.

This is a Genetic Psychology Monograph, that namely for May and July, 1926 (Vol. 1, Nos. 3 and 4). Innate racial and national psychological differences is its subject, as determined by the mental capacity and anthropomorphic characteristics of some of the nationalities present in the United States. It is logically a continuation (and a confirmation) of Carl Brigham's "Study of American Intelligence" (which occasioned so much editorial comment a few years ago), whose hypothesis is that national intelligence-differences and differences in intelligence of the groups based on different lengths of residence here are both explained on the basis of race, and that the nationalities of superior intelligence are largely Nordic, while the nationalities of lower intelligence are composed largely of Alpine and Mediterranean blood, the intelligence-decline of late years being due to a progressive lessening of the proportion of Nordic stock in this too-free land of the free. But the present psychologic seeker after truth thinks that the differences noted are more properly natioracial or subracial than racial in the broad, proper sense of the term.

The subjects of these psychometric examinations of intelligence with two minor exceptions were about 5,000 American-born Massachusetts children, from the first grade to and through the ninth grade, whose parents both were foreign-born and of the same nationality. The tests employed were the Pintner-Cunningham primary mental test, and the

Dearborn tests A′ and C′. In addition, the present experimental data include results from educational tests, anthropometric data, and information bearing on the relation of vocation and degree of intelligence. There is a useful summary of the results and the conclusions of other studies on national and racial differences, among them being the work of Pressey, Teter, Hunter, Waugh, Ferguson, Porteus, Pintner, Dickson, Thompson and Young.

While down to the Civil War the United States was developing into a true natio-race, in 1920 forty-five (45) per cent of our people were "constituted by more than twenty European natio-races (and one negro group) whose languages, customs, and traditions differed greatly not only from one another, but from the older American stock". "This difference means differences in general intelligence, in emotionality, in temperamental qualities, and in type and amount of creative impulse. Probably never before in history has such a psychically heterogeneous mass lived under one flag and state." (All who have had to do with measuring the intelligence of numerous immigrants know of their own experience that the racial differences in intelligence are great, and that certain nations and parts of nations are conspicuously inferior in intelligence, not only in abstract but in practical intelligence as well, Neifeld and F. Boas to the contrary, notwithstanding, who have never done a great amount of psychometric work. The causes (aside from the lack of schooling) of these conspicuous differences, so easily determined by performance-scales, constitute in the humble opinion of the present reviewer, one of the most interesting, important, and pressing problems of applied psychology.)

Doctor Hirsch's analysis of the causes of natio-racial formation is suggestive for future study. He thinks it is regularly the varied interplay of two or more of the following agencies:—(a) natural selection and isolation; (b) migrations and intermarriages of the migrating stock with the population which it conquers or in whose land it settles; (c) the operation of social selection, with all its diverse ramifications; (d) mutations; (e) the creativity of genius; (f) the acquisition of acquired characteristics, —no longer successfully deniable as a factor in evolution, however hard it may be to give at present the technical details of the transmitting germ plasm.

The scope of this constructive monograph is best indicated by a rehearsal of the chapter-titles: "Part I, Experimental Data, Procedure, and Results: Chapter 1, The selection of our subjects; 2, an examination of the tests used; 3, testing the tests; 4, analysis of the intelligence-quotients on the basis of nationality; 5, criticism of the results; 6, vocation and intelligence; 7, reading-tests, effort and intelligence; 8, anthropomorphic characteristics and intelligence. Part II, The Meaning of Natio-Racial Groups, their Formation and Development: 9, comparison of some of our national group differences with some of the results found in 'A Study of American Intelligence' [Brigham]; 10, the natio-racial hypothesis; 11, the principles underlying the formation of natio-races; and 12, the United States as a natio-race, present and future."

In view of such researches as this and as that of Brigham's, it is to be hoped that our present immigration law if not strengthened will be at least maintained indefinitely and stringently enforced, for the "melting pot" is running over however slow the fusion of these alien stocks within it. Our author may well be proud of this piece of work, and he may be confident that there is abundant confirmatory evidence from a somewhat different viewpoint that sometime may become available for the public good. It is now time, and long since, that mere unmeaning size of population gave place as a national purpose to a determination to national, "natio-racial", betterment in the way of education, intelligence, and real progress in the pursuit of contentment, not to say happiness. We have enough people but they have not enough education or intelligence.

GEORGE VAN NESS DEARBORN.

U. S. Veterans' Hospital, New York.

NEW BOOKS RECEIVED

(This notice does not preclude the book from further notice or review.)

The Psychology of Play Activities. By Harvey C. Lehman and Paul A. Witty, University of Kansas. A. S. Barnes and Co., New York, 1927. Pp. xviii+242. Price $2.00.

The Psychology of Personality. By P. F. Valentine. D. Appleton and Co., New York, 1927. Pp. xi+393. Price $2.50.

Clinical and Abnormal Psychology. By J. E. Wallace Wallin. Houghton Mifflin Co., New York, 1927. Pp. xxii+649. Price $3.00.

The Cause and Cure of Speech Disorders. By James Sonnett Greene and Emilie J. Wells. The Macmillan Co., New York, 1927. Pp. xvi+458. Price $4.50.

Psychopathology. By Bernard Hart, M.D. The Macmillan Co., New York, 1927. Pp. v+156.

The Religion Called Behaviorism. By Louis Berman. Boni and Liveright, New York, 1927. Pp. viii+153.

Psychology By Experiment. By Linus Ward Kline and Frances Littleton Kline. Ginn and Co., Boston, 1927. Pp. xii+339. Price $2.00.

Psychology the Science of Mental Activity. By Frederick H. Lund. A. G. Seiler, New York, 1927. Pp. xx+488. Price $2.50.

Educational Psychology. By Daniel Starch. The Macmillan Co., New York, 1927. Pp. ix+568. Price $2.60.

That Mind of Yours. By Daniel B. Leary. Lippincott, Philadelphia, 1927. Pp. 226. Price $1.75.

The Social Basis of Consciousness. By Trigant Burrow. Harcourt, Brace and Co., New York, 1927. Pp. xviii+256. Price $3.75.

Potassium and Tartrates, a Review of the Literature on Their Physiological Effects. The Commonwealth Press, Chicago, 1927. Pp. 168. Price $2.50.

Selected Papers on Psycho-Analysis. By Karl Abraham, M.D. Hogarth Press, London, 1927. Pp. 527. Price 30s.

Vom Liebes- und Sexualleben. Two vols. By Ludwig Frank. Georg Thieme, Leipzig, 1927. Pp. xx+807.

Religion in the Making. By Alfred N. Whitehead. The Macmillan Co., New York, 1927. Pp. 160. Price $1.50.

The Public Mind. By Norman Angell. E. P. Dutton, New York, 1927. Pp. x+232. Price $3.00.

Fear. By John R. Oliver. The Macmillan Co., New York, 1927. Pp. viii+366. Price $2.50.

The Delinquent Boy. By John Slawson. Badger, Boston, 1926. Pp. viii+477.